

ABSTRACT
EDUCATIONAL LEADERSHIP

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THE RELATIONSHIP BETWEEN INSTRUCTIONAL STRATEGIES/TEACHER
METHODOLOGIES AND STUDENT PERFORMANCE AND
ITS IMPLICATION FOR SCHOOL LEADERS

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The purpose of this study was to examine the relationship between instructional strategies/teacher methodologies on student performance: student achievement in mathematics and student behavior. The independent variables were administrative supervision, lesson planning, instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills, students' response to creative and different instructional strategies, administrators' supervision and postobservation conferences, administrators' supervision, and faculty development workshops. The moderator variables were grade level, class size, students' socioeconomic status, and teacher experience. The dependent variables were students' achievement in mathematics and student behavior.

Data were collected from ten schools and a total sample of 51 teachers participated in the survey. The Statistical Package for Social Sciences (SPSS) was used to

summarize the data. The following statistical procedures were used: Pearson Correlation, and Multiple Regression Analysis. The data were presented in two parts, the statistical distribution of the variables to observe the extent of their variations, and the results and analyses of the statistical tests in response to the identified research questions. All of the statistical procedures were tested at the (0.05) significance level.

Findings showed that administrators' postobservation conferences with teachers about the use of instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills had the most significant relationship with student achievement in mathematics ($r = .586$), whereas students' responses to creative and different instructional strategies had the most significant relationship with student behavior ($r = .590$). Administrative supervision had no significant relationship with students' achievement in mathematics ($r = .243$) or student behavior ($r = .183$). There was no significant relationship between lesson planning and student behavior. There was also no significant relationship between the moderator variables: grade level, class size, students' socioeconomic status, and teacher experience and students' achievement in mathematics or student behavior.

THE RELATIONSHIP BETWEEN INSTRUCTIONAL STRATEGIES/TEACHER
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ITS IMPLICATION FOR SCHOOL LEADERS

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BY

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CHAPTER I

THE PROBLEM IN CONTEXT

Purpose of the Study

The purpose of this study was to examine the relationship between instructional strategies/teacher methodologies and student academic achievement in mathematics on fourth grade students as measured by the schools' fourth grade Criterion Referenced Competency Tests (CRCT) results. The purpose also was to examine the relationship between instructional strategies/teacher methodologies and students' performance in terms of behavior in the classrooms. The results of this study's findings were intended to highlight effective teaching strategies for educational leaders to assess, monitor, and encourage such as differentiated instruction, flexible grouping, and use of higher order thinking skills in a standard based classroom. The findings could also help to address the learning needs of growing and diverse student population in today's classrooms. Administrators and teachers are continuously struggling with different educational initiatives and change as they attempt to manage the daily routine of teaching and managing classrooms.

The National Goals of 2000 and the No Child Left Behind (NCLB) Act of 2001 emphasize how important it is for all students to be taught and show progress. Hence, all schools are mandated to show students' progress by making Adequate Yearly Progress (AYP). It is expected that different instructional strategies such as differentiated

instruction, flexible grouping and teaching for higher order thinking skills relate positively to students' improvement in mathematics, and reduction of students' discipline problems. According to NCLB 2001, all schools are required to demonstrate that each student is performing at proficiency level (level two) that is on grade level and that over the years; level two students are demonstrating gains to level three.

The Problem of Student Performance in Selected Elementary Schools

There is an increasing challenge in today's schools to provide an appropriate and meaningful education for all students. Classrooms are filled with a diverse population of learners who are expected to meet state standards.

Student performance such as academic achievement in mathematics and behavior vary from school to school in any given school district. The problem of fourth grade students not performing well at the mathematics section of CRCT is seen in these elementary schools that were purposively selected to ensure diversity in population where population is a representation of high, middle and low performing schools. The selected schools for this study are located in a large urban school system in the Southeastern United States. All of the selected schools are Title 1 schools with four recognized as Distinguished Title 1 schools. These ranked from high to low performing schools based on their performance in the CRCT and their free and reduced lunch status. A good percentage of students in these schools received free or reduced lunch. Approximately 90% of the students in six schools receive free and reduced lunch. About 90% of the student population is African American and 10% are whites, Hispanics, and Asians

combined. Approximately 80% of students in two schools received free and reduced lunch. One of the two schools has a racial-mix of 80% African Americans, and 20% Hispanics. The other school has about 97% African Americans and 3% Hispanics. About 50% of the students in two schools receive free and reduced lunch. One of the two schools is about 90% African Americans and less than 10% whites, Hispanics, and Asians combined. The racial make-up of the last school is about 35% whites, 35% African Americans, 20% Hispanics, and less than 10% of Multi-Racial and Asians combined.

Most third and fourth grade students at these selected schools did not perform well on the mathematics section of the 2008 and 2009 CRCT. Data in Table 1 show that there were quite a good number of fourth grade students on level one in most schools. Students on level one are those that are performing below grade level. Those on level two are students that are performing on grade level and those on level three are students that are performing above grade level. This is an issue that is continually plaguing some of the schools however; this problem is not peculiar to the local schools in the study. It also manifests itself to other schools in the district especially the Title 1 schools. Fourth grade poor performance in the mathematics section of the CRCT standardized test is extensive in the district where the local schools are located.

What might have gone wrong one might ask? Could it very well be that teachers are not using impactful instructional interventions such as, planning for higher order thinking skills in their lessons, use of higher order thinking skills in their daily delivery of instruction and assessment, differentiated instruction, and flexible groupings?

Table 1

2008-2009 CRCT Math Scores of the Selected Elementary Schools

		Level 1		Level 2		Level 3	
Schools		2008	2009	2008	2009	2008	2009
Title 1 school; 79% of students receive free/reduced lunch							
School A	3 rd Grade	35.9	39.4	40.6	37.9	23.4	22.7
	4 th Grade	38.5	48.1	53.8	40.7	7.7	11.1
Title 1 school; 79% of students receive free/reduced lunch							
School B	3 rd Grade	67.0	55.1	27.3	33.3	5.7	11.5
	4 th Grade	44.7	48.1	41.2	40.7	14.1	11.1
Title 1 school (Distinguished); 89 %of students receive free/reduced lunch							
School C	3 rd Grade	49.1	33.3	37.7	37.3	13.2	29.4
	4 th Grade	17.4	18.9	60.9	50.9	21.7	30.2
Title 1 school (Distinguished); 93% of students receive free/reduced lunch							
School D	3 rd Grade	33.8	30.7	39.4	48.0	26.8	21.3
	4 th Grade	17.1	18.5	61.4	53.8	21.4	27.7
Title 1 school (Distinguished); 52% of students receive free/reduced lunch							
School E	3 rd Grade	31.0	28.9	42.0	43.4	27.0	27.7
	4 th Grade	24.3	31.2	60.8	47.3	14.9	21.5
Title 1 school (Distinguished); 94% of students receive free/reduced lunch							
School F	3 rd Grade	39.2	58.0	38.0	12.3	22.8	29.6
	4 th Grade	42.0	32.8	29.5	50.7	28.4	16.4
Title 1 school; 43.4% of students receive free/reduced lunch							
School G	3 rd Grade	24.6	26.2	40.6	32.8	34.8	41.0
	4 th Grade	9.1	15.3	63.6	54.2	27.3	30.5

Table 1 (continued)

		Level 1		Level 2		Level 3	
Schools		2008	2009	2008	2009	2008	2009
Title 1 school; 91% of students receive free/reduced lunch							
School H	3 rd Grade	62.3	33.9	27.9	45.8	9.8	20.3
	4 th Grade	33.3	41.1	35.3	48.2	31.4	10.7
Title 1 school; 99% of students receive free/reduced lunch							
School I	3 rd Grade	62.3	41.7	30.2	48.6	7.5	9.7
	4 th Grade	66.7	63.8	33.3	31.9	0	4.3
Title 1 school; 89% of students receive free/reduced lunch							
School J	3 rd Grade	83.1	40.0	15.3	50.0	1.7	10.0
	4 th Grade	72.6	61.5	24.7	30.8	2.7	7.7

Curriculum changes drastically from third to fourth grade. Third grade ends the primary grades while upper grade in the elementary school begins with fourth grade. Two issues arise. First, students might not have been adequately prepared cognitively to handle the transition from the use of concrete learning style in primary grades to the use of abstract learning style in upper grades. Second, teachers in the fourth grade may be using traditional methods to teach higher order abstract thinking skills far removed from the experiences of learners, especially those from low-income families. According to Piaget (1929), psychological and biological maturity of children determines their ability to complete certain tasks. White, Hayes, and Livesey (2005) cited Piaget: "Piaget's particular insight on child development is centered on the role of maturity in

children's increasing capacity to understand their world" (<http://www.highbeam.com/doc/1G1-224990952.html>)

A major drawback of traditional instruction is that many teachers "teach to the middle" which means that the needs of a growing number of students tend to go unmet (Haager & Klinger, 2005). Students on level three often finished their work early and are left unchallenged. The level one students that performed below average academically, needed constant support and redirection which took away the teacher's instructional time. The students that benefit the most from the lessons are the level two and the average students.

Same-age students differ markedly in their life circumstances, past experiences, and readiness to learn and such differences have significant impact on the content and pace of instruction (Tomlinson, 2000). Teaching strategies and teacher delivery can have direct impact on how students learn and behave in the classrooms. Teacher methodology/teaching strategies such as differentiated instruction, flexible grouping, and use of Bloom's (1956) Taxonomy higher order thinking skills could help all students in the class especially those on level one. These instructional means could be directed at higher order thinking skills in relation to students' previous knowledge and experiences. Students could be more engaged in the learning process as a result of different strategies utilized in the classrooms. Students learning through different strategies would help raise test scores, and improve behavior.

Another probable explanation is that, there is a disconnection between teachers and students. Teachers probably do not identify the weak learners before lesson planning

or during the process of teaching. Therefore, they might not be preparing for higher order thinking skills, explanations, and questions in terms of such students' experience. It is also possible, that the lesson planning process might not be focusing on the dimensions of higher order thinking skills. Student learning is heightened when explanations of issues are conducted within their experiences and learning levels and they receive questions from the teacher that seek their opinions. Tomlinson (2000) suggests that student learning is also boosted when they feel they are respected and valued within the context of the school and community.

Strategies Utilized by the Schools for Improving Student Performance

The schools have lots of programs in place for improving student performance and are constantly adding new programs for coping with the problem. The following strategies enumerated are in progress:

1. Early Intervention Program (EIP) helps cut down on teacher-pupil ratio in the classrooms.
2. One day a week After School Tutorial (Wednesdays) for students that are struggling with mathematics and reading.
3. Success For All Reading Program (SFA); a ninety minute block that is set aside school-wide where students go for reading lessons based on their reading levels and not on grade levels.
4. Scholastic Reading Inventory (SRI), a program that helps tests students to determine their reading level.

5. Developmental Reading Assessment (DRA), another program used for testing students' reading level.
6. Accelerated Reading (AR), a program that challenges students to read as many books as they can on and above their grade level.
7. Study Island, an on-line program that challenges students to work independently on their own and at their pace or get help from parents.
8. Consistency Management Cooperative Discipline (CMCD), a district-wide program that helps students take ownership of their conduct by setting example as role-models, acting as managers and helping to police other students.
9. The district and building leadership is constantly providing professional/staff development to help teachers with improving instructions and classroom management.

Teaching Methods/Strategies that Could Help Teachers in the Classroom

Higher Order Thinking Skills: According to Haager and Klinger (2005), a major drawback of traditional instruction is that many teachers 'teach to the middle' which means that the needs of a growing number of students will go unmet. Students' academic achievement in today's classrooms is highly compromised. Schools are reacting to the accountability pressure in an effort to make Adequate Yearly Progress (AYP) by piling on lots of extra drill and test prep on students. In an attempt to satisfy accountability part of the No Child Left Behind, teachers abandon innovative, interactive,

and higher order thinking skills experiences in favor of rote memorization and drill.

Most teachers believe that the traditional lecture method, drill and rote memorization is the quick fix to students' success in standardized tests.

Many researchers have attempted to define higher order thinking skills (HOTS). Ivie (1998) defined HOTS as abstract thinking, integrating informational systems, and following rules of logic and judgment. Swanson (2001) looked at HOTS as a problem-solving to critical or reflective thinking, and Leming (1998) described HOTS through a list of sub skills which include comparison, categorization, inference, prioritizing, and analytic perception.

The taxonomy of educational objectives often called 'Bloom Taxonomy' (Bloom, 1956) has been replaced by Anderson and Krathwohl (2001) with the following: (a) remember, (b) understand, (c) apply, (d) analyze, (e) evaluate, and (f) create. The higher order thinking skills (HOTS) was started more than two decades ago by Pogrow (2005). The HOTS program was to help the educationally disadvantaged students especially those in the Title 1 program. The goals of intervention were to increase thinking and socialization skills in ways to help students channel their innate intelligence in a higher level and so help increased test scores and overall academic performance without extra drill. HOTS program is now adopted on a large scale in about 2,600 schools serving approximately half a million disadvantaged students. Higher order thinking skills is focused on replacing teaching by telling with teaching by questioning. The HOTS curriculum is designed so that student-led conversations generate metacognition, inference, decontextualization, and information synthesis. Researcher Stanley Pogrow

(2005) in his study *HOTS Revisited: A thinking Development Approach to Reducing the Learning after Grade 3*, showed that students made a significant gains in test scores in reading and three times as much in comprehension. Cleveland County (North Carolina) Schools found that schools using HOTS exceeded state expected growth targets in both state and nationally norm tests.

Teachers ought to teach students how to think critically when they, themselves ask questions that call for analysis, synthesis, evaluating and creating. In the fields of science, social studies, philosophy, and arts, it is important to develop in students the ability to distinguish facts from hypotheses, to identify conclusion and supporting elements, to distinguish relevant from extraneous materials, and note how one idea relates to one another.

Experiential Education: Experiential education is a philosophy of education where a learner constructs knowledge, skill and value from direct experience. Experiential education (EE) addresses both higher order thinking skills (HOTS) and lower order thinking skills (LOTS) as the dimensions of academic achievement in the critical thinking skills. Researchers Ives and Obenchain (2006) quoted other researchers (Druian, Owens, & Owens, 1980):

A well-constructed experiential education-based curricula has three elements based on variety of literature: (a) learning should include opportunity for student-direction, (b) learning should make connections between curriculum and the real world, and (c) the third essential element of experiential education is an internalized inquiry process. (p. 61)

Authors and researchers Ives and Obenchain (2006) conducted a pre/post test study using HOTS and LOTS in six 12th-grade American Government classrooms. These classes were taught by three experienced teachers over one semester. Students in the two classes where EE program was implemented demonstrated greater gains in HOTS than the students in the other four classes. Results of the study's finding also showed that the evidence of the three elements of EE; student directedness where students were involved in decision-making on course experiences, assessment, and procedures; real-world connections where student recognize the connections between contents taught in class and application outside the classroom; and critical reflection of student critical thinking were found.

Research literature addressing academic outcomes of experiential education in traditional school settings is scant, observed (Hedin, 1983; Robe, 2000). There are continuing calls for more research on experiential education (Ewert, 1987).

Differentiated Instruction: Differentiated Instruction means creating multiple paths so that students of different abilities, interests, or learning need experience equally appropriate ways to absorb, use, develop, and present concepts as a part of the daily learning process. It allows students to take greater responsibility and ownership for their own learning, and provides opportunities for peer teaching and cooperative learning.

- No two children are alike.
- No two children learn in the same identical way.
- An enriched environment for one student is not necessarily enriched for another.

- In the classroom we should teach children to think for themselves (Diamond, 1989).

In differentiating instruction, the complexity of the contents, learning activities and products will vary so that all students are challenged while the essential curricula concepts remain the same. Methodologies employed in a classroom must be varied to suit the individual needs of all children. It is very important to offer students learning tasks that are appropriate to their learning needs rather than just to the grade and subject being taught. The teacher diagnoses the differences in students' readiness to learn the concept, interests, and learning styles of all the students in the class in preparation for differentiated instruction. Differentiation can occur in the content, process, product or environment in the classroom. Content can be described as the knowledge, skills and attitudes we want children to learn. Differentiating content requires that students are given pretest so the teacher can identify the students that require direct instruction and those that demonstrate understanding of the concept. Students that demonstrate understanding of the concept can be challenged and work ahead independently.

Differentiating the processes means varying learning activities or strategies to provide appropriate methods for students to explore the concepts. Students explore different paths based on their levels of cognitive processes. Differentiating the product means varying the complexity of the product that students create to demonstrate mastery of the concepts.

Flexible Grouping: This is a term commonly given to the practice of varying grouping strategies for instruction (Chapman, 1995). It is a good effective teaching

strategy to enhance learning in a diverse classroom. Flexible grouping strategies are found to be the most effective ways to meet the instructional needs of students and allow for collaboration to take place. The needs and interests of students play a vital role in creating flexible groups. This type of grouping include whole-class, teacher-led small groups, student-led small groups, partners and individuals. The uniqueness of flexible grouping is ability for student to accept differences in abilities and social behaviors and appreciate one another for their various strengths. Teachers set up small heterogeneous groups based on ability, gender, and maturity level. Students participate in activities that require different abilities within the same task. Each member of the group has something positive to bring to the table while working in a cooperative setting. Flood, Lapp, Flood, and Nagel (1992) argued for flexibility in instructional grouping in order to create what they called effective groups as an alternative to homogeneous ability grouping. Flexible grouping can be appropriate for centers: math centers can be used for group problem solving using manipulative activities; the writing center can be used for peer editing and publishing; and the reading center can be used for shared or partner reading, peer tutoring, and cooperative learning activities.

The School Organizational Framework for Supervision of Learning

It has been demonstrated that there is substantial variance in students' performance on the CRCT over a period of years. The School Organizational Chart as shown in Figure 1 shows the interconnectedness of roles in the selected schools.

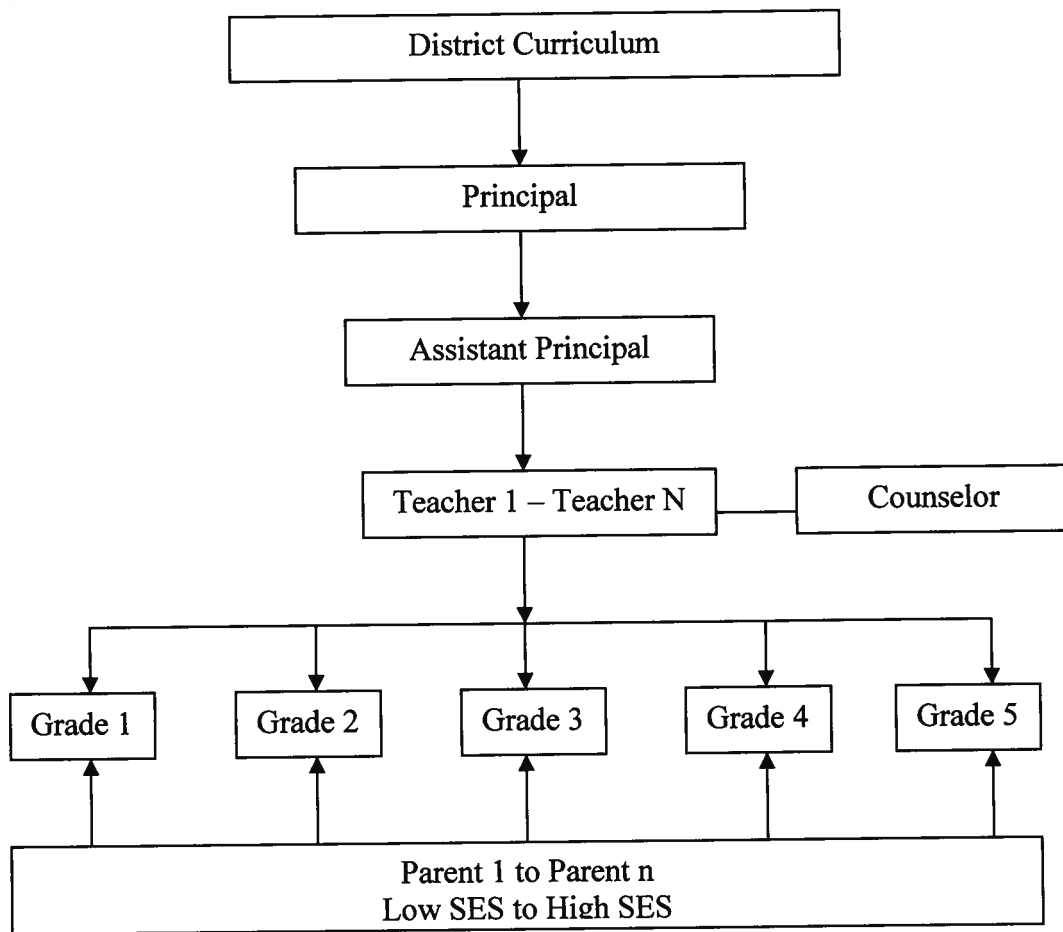


Figure 1: School Organizational Chart

The principal as the “Instructional Leader” upholds the school district curriculum that the teachers implement under his/her guidance and that of the assistant principal. It is the responsibility of the instructional leader to ensure that teachers comply with using the school district curriculum. Teachers tend to turn in lesson plans every week and the principal or the assistant principal reads and checks to make sure that lesson objectives, and its assessment are aligned with the performance standards of the state of Georgia.

However, they might not be examining whether the boiler-plate format includes teaching for higher order thinking skills.

Teachers do delivery in different classrooms. The principal and the assistant principal ensure that teachers teach what is in their lesson plans and that they comply with the lessons objectives and the standards. This process takes place through observation that usually lasts for twenty minutes. After observation, administrator does postcheck conference with the teacher that was observed. It is the responsibility of the instructional leader to point out to the teacher his/her areas of strengths and weaknesses. Everything including, classroom management, student behavior, student participation, delivery of instruction and its assessment are discussed.

Administrators use this postobservation conference as an opportunity to help individual teacher in his or her areas of weakness. It is also a good opportunity to arrange for professional/faculty development in areas that would help teachers grow professionally including writing lesson plans, delivery of instruction and its assessment to all faculty members or particular grade level as the case may be.

The connection of the school counselor to the students is to reinforce positive behavior through individual, small group and whole class counseling. Students are then connected to their parents who sent them to school. There is a strong correlation between students' performance and family's socioeconomic status (SES) and parents' level of education.

Issues that Arise

In the use of the various strategies including differentiated instruction and flexible grouping:

- Teachers might not be identifying the low performing students and their areas of weaknesses.
- Teachers might not be including higher order thinking skills in their lesson plans or delivery as being tested on benchmarks and CRCT.
- Teachers might not be preparing explanations and questions that focus on higher order thinking skills in relation to students' experiences to bridge the gap with textbooks/curriculum standards.
- Teachers probably tend to 'teach to the middle group' using traditional method of instruction, hence students from low socio-economic status are left out.
- Teacher methodology might also not be relating to differences in students' learning styles.
- The benchmark test results are probably not used by teachers and administrators to revise lesson plans and teaching delivery.
- Class misbehaviors probably occur as a result of students' poor performance and lack of teachers' remedial strategies that would promote students' success.

Problem statement

It is proposed to examine whether fourth grade students' performance in mathematics and overall student behavior is related to instructional strategies and teacher style of delivery. This present study also examines the extent to which different teaching strategies including use of higher order thinking skills, differentiated instruction, and flexible grouping would impact student performance in the area of discipline and mathematics section of CRCT.

Research Questions

- RQ1: Is there a significant relationship between administrative supervision and teachers' perceptions of student achievement in mathematics?
- RQ2: Is there a significant relationship between lesson planning and teachers' perceptions of student achievement in mathematics?
- RQ3: Is there a significant relationship between instructional strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills, and teachers' perceptions of student achievement in mathematics?
- RQ4: Is there a significant relationship between students' response to creative and different instructional strategies and teachers' perceptions of student achievement in mathematics?
- RQ5: Is there a significant relationship between administrators' supervision and postobservation conferences about the use of different instructional

strategies and teachers' perceptions of student achievement in mathematics?

- RQ6: Is there a significant relationship between administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, high order thinking skills, constructing higher order thinking skills tests, evaluating and research classroom problems and teachers' perceptions of student achievement in mathematics?
- RQ7: Is there a significant relationship between administrative supervision and teachers' perceptions of student behavior?
- RQ8: Is there a significant relationship between lesson planning and teachers' perceptions of student behavior?
- RQ9: Is there a significant relationship between instruction strategies designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills and teachers' perceptions of student behavior?
- RQ10: Is there a significant relationship between students' response to creative and different instructional strategies and teachers' perception of student behavior?
- RQ11: Is there a significant relationship between administrators' supervision and postobservation conferences about the use of instruction strategies designed to include differentiated instruction, flexible grouping and

teaching for higher order thinking skills and teachers' perceptions of student behavior?

RQ12: Is there a significant relationship between administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, higher order thinking skills, constructing higher order thinking skills tests, evaluating and research classroom problems and teachers' perceptions of student behavior?

RQ13: Is there a significant relationship between teachers'/students' demographic data: grade level, class size, students' socioeconomic status, and teacher experience and teachers' perceptions of student behavior?

RQ14: Is there a significant relationship between teachers'/students' demographics data: grade level, class size, students' socioeconomic status and teacher experience and teachers' perceptions of student behavior?

RQ15: In a stepwise multiple regression analysis of the data, what are the independent variables that explain student academic achievement in mathematics?

RQ16: In a stepwise multiple regression analysis of the data, what are the independent variables that explain student behavior?

Significance of the Study

Part of the No Child Left Behind Act of 2001 is the demands for high standard, accountability and most importantly to improve student achievement. The mandate demands that schools make Adequate Yearly Progress (AYP) and that, students in third, fifth, and eighth grades pass reading and mathematics sections of the standardized test to be promoted to the next grade. With the rapid advance of high standards, accountability, and testing movements in schools throughout the nation, there is a great need to prepare teachers well for the job ahead. Towards the above ends, the following benefits might occur if the results are significant:

1. **Teacher benefits:** Teachers might be able to utilize data on teaching and learning, in their lesson planning, and in delivery process to meet the individual needs of each learner. Instruction should be delivered using differentiated instruction to target the needs of the three different learning levels in the class: level one, at risk students performing below grade level; level two, students that are performing on grade level; and level three, students that are performing above grade level. Teachers might be able to utilize data to plan lessons and delivery instruction using differentiated instruction in conjunction with flexible grouping while teaching for higher order thinking skills.
2. **Benefits for Administrators:** Administrators might use data as instructional leaders in the supervision and evaluation of instruction. The instructional supervisors might also utilize data in evaluating teachers during classroom

observations and in conducting postobservation conferences. Administrators might also utilize data to provide teachers with help through professional/staff development in the areas of different instructional strategies.

3. **Benefits for School System:** The school system-wide supervision through the executive directors could benefit from the study. The school system might utilize it by emphasizing that teachers use different instructional strategies to meet the needs of the diverse learners in the class and at the same time, improve students' performance. Through professional/staff development, teachers should be prepared to teach students using different instructional strategies such as differentiated instruction and flexible grouping among others while teaching for higher order thinking skills.

CHAPTER II

REVIEW OF THE LITERATURE

One of the most consistent and seemingly uncontroversial findings in education literature is that every student learns differently. With the individual differences and the varied abilities in today's classrooms, teaching must be adapted to meet the needs of the learner. The review of research is conducted under the following headings: instructional strategies/teacher methodologies and student academic achievement and instructional strategies/ teacher methodologies and student behavior.

Parents are the primary caregivers and the first teachers of their children. It is clear evidence that parental encouragement, activities, interest at home and participation in schools and classrooms affect children's achievements, attitudes, and future aspirations; yet teachers are perceived by students as the primary authority figures within the academic setting. Supportive teachers have been known to impact not just academic achievement but also student behavior.

Instructional Strategies/Teacher Methodologies and Student Academic Achievement

Ives and Obenchain (2006) in their study examined the effect of experiential education (EE) approach in enhancing the higher order thinking skills (HOTS) in 12th grade classroom. The study which took place in six 12th grade American Government classes was a collaborative effort among two university faculty members and three

classroom teachers. One classroom teacher deliberately crafted her curriculum to reflect the EE approach and the other two teachers' classrooms served as a control group. A pre and posttest was given with one predictor variable which was the frequency of experiential education in the classrooms and two outcome variables which are the basic knowledge of American Government course content using lower order thinking skills (LOTS) and HOTS applied to American Government content. The study lasted for the entire semester with the pretest administered the second week. Each classroom was observed six times throughout the semester by four investigators trained on using the Anecdotal Record of Experiential Education Events (AREEE) form. Results of the study showed that students engaged in a curriculum that employed student-directedness and complex problem-solving over focused practice on lower order thinking skills and skill acquisition showed a significant advantage in higher order thinking skills. Students that used EE approach made gains in their strategic and complex problem-solving skills. It also showed that students in classes taught through increased implementation of experiential education practices demonstrate a greater improvement in HOTS from pretest to posttest compared to traditional instruction approach. According to Hedin (1983) and Robe (2000) as quoted by the researchers Ives and Obenchain (2006), "research literature addressing academic outcomes of experiential education in traditional school settings is scant" (p. 68). There is a need for more research in this area.

Ysseldyke, Spicuzza, Kosciulek, Teelucksingh, Boys, and Lemkuil (2003) examined the effect of computerized curriculum-based instruction in enhancing mathematics instruction. Participants in this study were part of a multiple-grade project

conducted at four elementary schools in a large urban school district in the Midwest. A total of 397 students (grades 3-5) participated in the Accelerated Math (AM) intervention program, 484 students were selected from four schools and 429 students who were randomly selected from the district as a control group were part of the year -long study. Approximately 75% of the AM intervention group was students of color receiving free or reduced lunch. Additionally, 30% of this group received English Language Learner (ELL) services. Teachers for the AM intervention group received training and a copy of the AM software. The AM program produced individualized practice assignments and allowed each student to work on assignments at his or her own pace within a continuous supply of new problems and assignments. The performance of students participating in AM instruction was compared to the performance of students within the same schools and then to that of students from the district that were randomly selected. Students enrolled in the AM program benefited the most. These students made gains in mathematics performance and gains were consistent for high, middle, and low performing students. Findings showed that use of computerized instructional management system enabled teachers to provide differentiated instruction and make instructional adaptations for students of all ability levels.

Burke and Dunn (2003) investigated how learning style-based teaching help raise minority student test scores. Participants in this study were African-American students of the Freeport School District in Illinois. The superintendent of the school district, after a legal suit by the African-American Ministers United for Change (AMUCH), adopted Dunn and Dunn's (as cited in Farkas, 2003) learning style approach. Teachers had one

week long staff development. A selected cohort of teachers was encouraged to identify students' learning styles with appropriate versions of the Learning Styles Inventory (LSI) for grades 3-4 and 5-12. Researchers observed that classrooms were redesigned to accommodate the new approach. Teachers introduced small-group strategies such as team learning, circle of knowledge, brainstorming, and case studies. After one year of implementing Dunn and Dunn's Learning Style Strategies, students began to achieve higher test scores than they had before. Finding also showed that students were motivated; their attitudes toward learning and one another improved, and began using their learning style strengths to study and do homework. In addition, students become aware of how they learned and remembered new and difficult information very easily. All students in Freeport's learning style classes performed better on standardized achievement tests when using their learning styles. Students' continued the upward trend for the next two to three years, their gains were monitored and reported and they began to enjoy school.

Pociask and Settles (2007) in their study investigated the use of multiple intelligences (MI) in order to increase students' academic achievement. The study was conducted at Glendale Community College in Arizona with a sample of 2,400 third and fourth grade students with learning disabilities and seventh and eighth grade science students who exhibited poor test scores. The two teacher researchers incorporated MI into their daily lesson plan. Seven learning stations dealing with the day's topic were set up and students learned through reading, writing, moving and building, solving problems cooperatively, creating rhymes, and computing. After five months of study, finding

showed an increase in student independence and a decrease in inappropriate skills. Students' self esteem, cooperation skills, and leadership skills improved, and their retention of materials improved also. Teachers were seen as resource persons and they became less directive and more facilitative.

Ellis, Ellis, Huemann, and Stolarik (2007) explored in their study, improving mathematics skills using differentiated instruction. A total of 79 students, 26 tenth-twelfth graders and 53 kindergarten-second grade students including 25 teachers participated in the study. The study was conducted in two school sites (A and B) elementary schools and a high school in the suburb of Chicago. Researchers used student survey, teacher survey, observation checklist, and pre and posttests. Instruction was differentiated and so were assignments to suit individual needs. The research lasted for five months—January 2007 to May 2007—and strategies used at the period included cooperative learning lessons, multiple intelligence based lessons, student choice of assignments, and differentiated assignments. Results of the finding showed a significant increase in posttest scores in mathematics and an increase in on-task behavior and slight decrease in off-task behavior.

Kim (2005) in his study explored the effects of a constructivist teaching approach on student academic achievement, self-concept, and learning strategies. The sample consisted of 76 six graders who were divided into two groups. The experimental group was taught using the constructivist approach and the control group was taught using the traditional approach. The constructivist teaching approach was based on (a) inviting ideas, (b) exploring, (c) proposing, (d) explanation and solution, and (e) taking action.

The traditional teaching approach used the following steps: (a) introduction, (b) development, and (c) review. The study lasted for 40 hours over 9 weeks. A significant difference was found between the scores of students on the experimental group and those on the control group. Results of the findings showed that students in the experimental group scored higher than those on the control group on the posttest.

Tracey and Young (2005) examined the effects of technology skills on students' literacy achievement. The authors examined an internet-based reading program in which students read passages and complete follow-up activities. The text passages were based on current events in the areas of technology, science, trends, sports, and other national or world events. The follow-up activities included comprehension, vocabulary questions and written responses. The study consisted of 219 fifth grade students, mostly middle class Caucasians from same geographical area. Participants came from 11 classrooms and were put into three groups: differentiated, undifferentiated, and control. The differentiated group read passages that were leveled according to their reading ability. The undifferentiated group was presented with reading materials that were consistent with grade level, not ability level. The control group did not use the program at all. This study was conducted from October to June and the results of the study showed that those students in the differentiated group made significant gains in both reading and technology.

Reith, Bryant, Kinzer, Colburn, Hur, Hartman, and Choi (2003) investigated the impact of anchored instruction on teaching and learning activities in two ninth-grade language art classes. A sample of 62 ninth-grade students participated in this study.

Students in both classes were randomly selected and were taught by the same teacher. Each class included seven students with learning disabilities. Anchored instruction included the use of technology using videos. Reith et al. collected data using observation system and teacher and student interviews. Length and type of questions asked by the teacher and length and level (factual or interpretive) were recorded. Teachers and students were asked a series of questions before and after participating in anchored instruction. The Results of the study indicated that students were observed to be more actively involved in instructional activities. Students used their knowledge to solve real problems rather than simply memorizing information. Students responded to teacher's high level questions using interpretive rather than factual responses. Most importantly, anchored instruction provided inclusive instruction for students with disabilities by giving them opportunities to participate in class discussions.

Boulware-Gooden, Carreker, Thornhill, and Joshi (2007) explored the use of instruction of metacognitive strategies to enhance reading comprehension and vocabulary achievement of third grade students. One hundred nineteen third-grade students from six third-grade classrooms in two urban elementary schools in the Southwest United States participated in the study. One school was selected as the intervention/experimental group and the other as comparison school. Students in both schools were given a pretest prior to the five-week study and a posttest at the end of the study. Students from the two schools received 30 minutes of daily reading comprehension instruction for 25 days. The comparison group received their reading instruction using traditional method of memorizing a definition and using the word in a sentence whereas the experimental

group instruction incorporated metacognitive strategies which included identifying main idea, supporting ideas and details in the passage, summarizing the passage in their own words. The findings supported that the use of metacognitive instruction in teaching reading produced better and successful results. Students in the experimental school had greater increase on the vocabulary measure as they were required to generate synonyms and antonyms. They also had a greater gain in comprehension compared to the comparison group.

Al-Balhan (2007) examined the effectiveness of students' learning styles in relation to academic performance in middle school mathematics. This study was conducted in the urban areas of Kuwait and the participants were middle school students who were referred to a learning and developmental institute due to difficulties learning mathematics. Participants were divided into two groups, experimental and control. Mathematics instruction was delivered to the control group using the traditional methods of teaching from the text books and teacher's basic background knowledge. The experimental group was taught using the Markova Style of Learning (MSL) method. Markova's Thinking Patterns Inventory (1992) was administered to assess the preferred learning style of each student. Students in the experimental group used hands-on approach strategy exploring Markova's six patterns of personal thinking. Students processed mathematical information using one or a combination of (KAV, KVA, AVK, AKV, VKA, and VAK) where K stands for kinesthetic, A for auditory and V for visual. The results of the findings showed that students in the experimental group performed better overall in mathematics than the control group. These findings are consistent with

research concerned with identifying the relationship between academic achievement and student learning style.

Whitney (2007) studied the use of technology in literacy instruction examined the implication of using internet-based reading programs for teaching students from low socioeconomic backgrounds. Sample of the study were 219 fifth-grade students mostly whites from middle-class families who live in the same geographical area. The 11 classrooms from which the students came from were grouped into one of three experimental categories: differentiated, undifferentiated, and control. The differentiated group read passages that were leveled according to their reading ability. The undifferentiated group read passages that were consistent with grade-level text and the control group did not use the program at all. The study was conducted over the course of the entire school year. Students' growth was assessed using three data sources: the Scholastic Reading Inventory (SRI), Terra Nova, and the Southeast and Islands Regional Technology in Education Consortium Survey. The researchers found a statistically significant impact on reading and language for the differentiated group over control group. Students in the differentiated group reported greater increases in experience using a variety of technological applications and significant gains in both reading skills and the use of technology.

Okpala, Smith, Jones, and Ellis (2000) investigated the relationship between students' reading and mathematics achievement score and teachers' characteristics. Participants were 4,256 fourth-grade students from 42 elementary schools in a North Carolina county. Teachers' characteristics in this study include teachers' years of

education and years of experience on the job which invariable impact teachers' teaching methods. Data for this study were gathered from different sources within the County's Board of Education: end of the grade mathematics and reading scores, and teachers' information. The results from the analysis show that teachers with a master's degree were significant in explaining changes in mathematics achievement at a high significance level of 1%, but insignificant in reading scores. The percentage of teachers with ten years of teaching experience was correlated with mathematics and reading at a significance level of 1% percent and 5%, respectively.

Bryan and Burstein (2004) examined the relationship between homework completion and academic performance. The authors engaged a team of elementary school teachers in Participatory Action Research (PAR) for two years to study the effectiveness of teacher-selected homework strategies on students with and without learning disabilities and with and without homework problems. After studying the database, the team selected and systematically assessed the effects of four techniques on students' homework completion rates and weekly performance on mathematics and spelling quizzes. The authors gave recommendations that teachers use strategies that show improving student homework completion and task performance: (a) reinforcement, (b) graphing, (c) cooperative study teams, (d) homework planners, (e) real-life assignments, and (f) family involvement. The results showed that the teacher-selected intervention strategies significantly increased homework completion and performance on weekly mathematics and spelling tests.

Hopson, Simms, and Knezek (2002) examined the effect of a technology-enriched classroom on student development of higher order thinking skills and student attitudes towards computers. A sample of 80 sixth graders and 86 fifth graders in a suburban North Central Texas school district were tested using the Ross Test of Higher Cognitive Processes. Students were also surveyed using the Computer Attitude Questionnaire. Two groups participated in the study that lasted for 20 weeks. One group received treatment and was instructed using the district's fifth-grade curriculum in a technology-rich environment, and were provided access to computer as a tool for learning. The comparison groups were taught in a traditional classroom setting using the district curriculum for fifth grade. Teachers reported that the technology-enriched classroom differed from the traditional classroom in several significant ways. The learning was more student-centered and less teacher/textbook driven. The environment facilitated the use of cooperative group and student participation focused on application rather than knowledge acquisition. The differentiated instruction using a technology-enriched classroom had both engaged and challenged students to not only to think critical but to solve problems at the analysis, synthesis, and evaluation levels of Bloom's Taxonomy.

Instructional Strategies/Teacher Methodologies and Student Behavior

Campbell (1990) examined the relationship between student behavior and use of multiple intelligences in the daily instruction. He conducted a study on incorporating multiple intelligences in third grade classroom at Glendale Community College in Arizona. Seven learning stations dealing with the day's topic were set up daily and

students learned through reading, writing, moving and building, solving problems cooperatively, creating rhymes, and computing. Information was gathered by daily journals, classroom survey, and student assessment inventory of the centers. He used pre and postobservation checklists as one of his instruments. At the end of the 1989/1990 school year, findings showed that all negative behaviors decreased significantly. Results showed that talking out in class went from 500 occurrences at the pretest down to 100 after the posttest; off-task behaviors went down from 400 occurrences to 100, and disrespect towards staff and peers decreased the most, from 200 to zero. The findings also showed improved retention rates and lower incidences of off-task because students were more focused and engaged due to their increased awareness of their strongest learning style. A significant decrease in poor student behaviors was due to more diversified use of multiple intelligence and multiple activities. Parents also reported behavior improved at home.

Glaser, Rieth, Kinzer, Prestidge, and Peter (1999) analyzed the effects of an anchored instruction. Glaser et al. carried out the study in an eighth-grade social studies classroom. A video segment or movie is presented in class to facilitate learning. Video-based anchors helped teachers to provide more inclusive instruction that bypasses text and enabled students with and without disabilities to have increased access to learning. In anchoring instruction, students used their knowledge to solve realistic problems, rather than simply memorize information. Students were forced to ask hard questions, evaluate data, analyze information, describe issues, challenge assumptions, reflect on their background knowledge, and conduct research to generate links between new information

and their existing knowledge. Glaser et al. quoted other researchers (King, 1994; O’Keefe, 1995): “These activities are designed to enable students to draw conclusions and transfer knowledge to a new problem situation” (p. 173). The authors reported that when they implemented anchored instruction, less time was spend addressing behavior and classroom management problems and task/direction issues. Students paid attention to the task, participated in the lessons, and created fewer behavior and classroom management problems.

Rosler (2008) in her study described classroom success story using process drama in one fifth-grade social studies class. The researcher showed how process drama was used in a fifth-grade classroom at an elementary school in a district that contains seventeen elementary schools. The name of the school and district was not disclosed by the researcher. The school is characterized as disadvantaged with 85% of the students on free lunch. The majority of the students come from one-parent households, headed by grandmothers. Students became engaged in the material, collaborated with each other, and became leaders in class. Researcher-generated pretexts from social studies curriculum in topics such as Boston Tea Party, Winning the Revolutionary War, Antislavery Movement, The Holocaust, etc. The drama sessions inspired students to ask questions, create images, determine the importance of text details, infer and synthesize as they read. Students’ success at process drama carried over into other areas of the classroom as well. Students became better readers of expository text. Some of the students with lowest reading and writing abilities used the skills to become leaders during drama sessions. Students not only increased their reading skills but also showed

improvement in their written work and class tests as well. Students were motivated and excited because they had a voice in their learning and this led to excellent behavior. This saved valuable class time from being spent on discipline.

Groves (2006) explored the use of art as a behavior modification tool in teaching. Participants of 150 at-risk students were drawn from six city schools. The researcher who is also the artist conducted 45-minute sessions throughout the school year in a classroom setting with the help of two paraprofessionals and two college mentors who are art majors. The art sessions were intended for children and youth to work together, complete projects, and control their behavior. A method was developed to guide and motivate self-control. On the first and subsequent days, sticky notes were placed in front of students. When rules were broken, the sticky note was removed and was not replaced for the remainder of the session. Stickers were put in the opportunity box and names were drawn at the end of the week. Students were rewarded with art supplies. By second semester, the reward was replaced with art party but classroom rules remained the same. The rules which were developed by the instructor and students included: (a) listen when others are talking, (b) follow directions, (c) keep hands, feet, and objects to yourself, and (d) work and play in a safe manner. Students were introduced to brainstorming techniques. They were exposed to learning creative process that included development of an idea, how to create plan, doing work and reflecting on the outcomes. They also learned the difference between criticism and critique, and that creative processes could be applied to other curricula. Major project activities were designed and were appropriate for grade level. The project incorporated rubrics and vocabulary sheets to define terms,

methods and styles. The program was evaluated using pre and posttests, visual journals, number of students that stayed on task, number of students that completed projects, videos of students engaged in activities, and photographs of students' work and self-evaluation. The findings showed that overall assessment results for grade levels in mathematics and reading at the project sites improved over previous year's result as indicated by the Kansas State Board of Education. Parents and teachers both reported improved attitudes towards school on the part of students who regularly attended the program. Teachers reported that a majority of students who regularly attended the program made improvement in their academic grades. Learning to use the tools of trade appropriately developed cognitive skills but most importantly taught self-discipline.

Corso (2007) analyzed the practices that enhance children's social-emotional development and preventing challenges in preschool. Teachers that teach in preschool settings are faced with inappropriate behaviors from toddlers that challenge their classroom management and their ability to teach. Some of the challenging behaviors that teachers have to deal with, include temper tantrums, crying a lot, always taking things from each other and "having a fit" when it comes time to change activities. These behaviors are frustrating to teachers and can disrupt the ongoing routine of the classroom. The author of this study put together practices that would help teachers with classroom management and teaching styles. It is very important that teachers build a positive and supportive relationship with students and their families from day one. Teachers should create supportive classroom environments, both physical and social to help students stay engaged thereby minimizing challenging behaviors. Creating

supportive environments involves implementing practices that promote children's engagement, help children understand expectations and routines. Promote children's socio-emotional development by teaching social skills. Plan and have in place an intensive individualized intervention for every student in your class. This could be achieved with the use of a teaming strategy—teaming with parents and families. Teachers should create activities that are fun and engaging and also teach with intention. The findings of the study showed that children exhibit challenging behaviors when they are bored, frustrated or confused. Therefore teachers of preschool should ensure that children know what is expected of them, what to do at all times, when to do it and how to do it. Creating a caring, engaging, and responsive classroom will minimize behavioral challenges.

Haughey, Snart, & Da Costa (2003) explored in their study the influence of three interventions on the literacy achievement of grade one students. Participants were chosen from 10 schools in high poverty areas. Schools were chosen based on highest transience rates and highest number of families in the district living below Statistics Canadian Low Income Cut-Off. This study ran from January to June of 2000. It began with the creation of small classes of 15 or fewer students of first grade students in 10 schools. There was an enrollment of 207 students but with transience rate, only 161 students were present to take the January pretest and May posttest. The researchers explored the influence of three interventions on literacy: small class size, a focus on literacy, and teachers' continuing professional development. The focus on literacy included the reading comprehension and writing components.

Findings of the study based on the quantitative and qualitative data during the six-month study showed that students made progress and scores on both reading and writing on the Canadian Test of Basic Skills (CTBS) soared. Teachers shared stories of students' improved in-class behavior. Despite the significant limitations because of the length of the study, findings supported that the combination of three interventions—smaller classes, a focus on literacy, and continued professional development—were successful in helping first grade students in high poverty, high transience environments made solid gains in their academic and social abilities.

Conroy, Sutherland, Snyder, and Marsh (2008) examined how class-wide interventions make a lot of difference in delivering effective instruction. Participants included special education and general education teachers working collaboratively in the same classroom in an urban elementary school. In an effort to minimize disruptions and maintain positive classroom atmosphere, teachers established classroom rules and specific procedures that both special and general education students could follow. Classroom procedures include turning in homework, and lining up to go for lunch. As they continuously sought ways to improve their teaching to help their students, they also spent a significant amount of time praising students not just for the work done correctly but also for good attempts. They incorporated a group management system called the good behavior game (GBG) into their instructional time as part of their classroom management strategy. Teachers audio-taped an instructional lesson and graphed the number of opportunities to respond (OTRs) to their questions that they provided and the number of times they praised their students during the lesson. With the self-evaluation of

the instructional language, teachers developed a great awareness of the frequency which provided their students with OTRS and of the frequency praise statements. Based on their findings, researchers concluded that making small changes in the ways that the teachers instructed their students and rewarded students often for work attempted resulted in an improved positive classroom atmosphere and an increased in students' effort.

Martin (2002) examined the impact of a mastery motivational climate motor skill intervention on student achievement and behavior in a natural physical education setting. A sample of 57 kindergarten children participated in the six-week study. One group received a treatment of mastery motivation climate intervention. The other served as a control group. All the participants performed the test of gross motor skill development and completed the cognitive recall checklist prior to and after intervention. Results of the findings showed that students that received the treatment had better motor skill performance at postintervention than preintervention. They performed significantly better than students in the control group in all areas. The study provides support that mastery motivational climate can effectively change student performance and have positive influence in student behavior and learning in naturalistic school settings.

Ahrens (2008) explored a new way of reinventing a sixth-grade reading program. The author/researcher was concerned about the failing test scores in her school and the rest of the school district. This school district is located in Northern California. She came up with an action research project that revitalized the reading program at the middle school where she taught. Participants in this study included all the sixth grade students and their reading teachers. Teacher and researcher began implementing the research-

based teaching methods as a pilot program in her own classroom. The research-based teaching program included a simple independent, monitored reading, not modeled silent reading, research on phonics instruction, and explicit comprehension strategies. Students were placed in reading groups/classes based on the results of their reading assessment and also based on the needs of the students. Teachers monitored students' progress by using an Independent Reading Plan (IRP), as fluency, accuracy, and comprehension were tested and data recorded once a week. Ahrens (2008) quoted Hollingsworth and Boin (2002): "An Independent Reading Plan helps students self-select and read materials at their independent reading level depending on their developmental levels" (p. 642). At the end of the first semester, findings showed that the program worked; grades improved and behavior issues ceased. Eighty percent of the sixth-grade students were able to read at grade level, a 40% increase from the year before. The improvements in behavior were attributed to the students' ability to work at independent and instructional levels. The elimination of one-size-fits-all, frustration in reading resulted in positive behavior.

Rikard and Banville (2005) examined the perceptions of physical education teachers of their experience teaching on a block schedule compared to the tradition schedule. Fifteen physical education teachers from eight high schools located in a southeastern school district in the United States were interviewed at their school sites. Eight of the high schools from one district were chosen based on demographics, student diversity and population, use of the AB block scheduling format, and teacher willingness to participate in the study. The six male and nine female teacher participants were purposively chosen based on a minimum of five years of teaching in high school, a

minimum of two years currently teaching on a block schedule and a recommendation as instructional leader from their departmental chairs. Student populations from these high schools ranged from 1,474 to 2,828 with an average of 1,972 students. Teachers were asked to compare their perceptions of a change in scheduling formats from traditional to block scheduling relative to (a) their planning and teaching practices, (b) student responses, (c) any change in student learning, (d) changes in student discipline and management issues, (e) student absences, and (f) preferences to one format compared to the other. Responses from the teachers' interview were grouped under four categories: planning, instruction, learning environment, and student learning. The results of the findings showed that all the teachers except one agreed that block scheduling gave opportunity and ample time for implementing different teaching strategies. In terms of student discipline and class management, six teachers noted a decrease in discipline problems and tardiness, and five reported that students showed more enthusiasm in their classes. This, the teachers attributed to variety of activities available in AB block scheduling.

Burke and Burke-Samide (2004) in their study, *Required Changes in the Classroom Environment*, examined the classroom environment as measured by Dunn and Dunn's (2002) learning style inventory. Two groups of 39 elementary male students participated in the study. Low achieving students tended to have behavior problems and interpersonal difficulties when there was a mismatch between student ability and task difficulty. Two types of intervention strategies were used: one group received an interpersonal problem-solving treatment, and the other group received a treatment in a

language workshop to meet with their academic needs. The authors found that both groups made significant improvement in academics and discipline, but the problem-solving group made more significant improvement in their behavior. Results of the findings showed that students' performance and attitudes towards learning improved when their individual learning styles were accommodated by the learning environment.

Downer, Rimm-Kaufman, and Pianta (2007) in their study, *How do Classroom Conditions and Children's Risk for School Problems Contribute to Behavioral Engagement in Learning*, examined some instructional contexts and strategies challenge at-risk children in their classroom. The study found that at-risk children have problems dealing with challenges of learning beyond their natural capabilities in such settings as large group instruction, individualized seat work and even basic skills instruction. Their ability to meet these challenges lead to inappropriate or off-task behaviors. The authors found that among other things, classroom environment and some instructional strategies significantly impact students' behavioral engagement.

Peterson, Kromrey, Borg, and Lewis (1990) examined the effect of teacher performance in terms of use of time, questioning, providing feedback and maintaining discipline relate to improvements in student academic achievement and conduct. The authors affirmed that the best way to improve education in the public schools is through teacher performance. Teachers in an undisclosed school district of Florida participated in this study. This exploratory study measured and compared essential using (Florida Performance Measurement System [FPMS]) teacher performance scores that associate with student achievement and conduct and higher order teaching performance (Teaching

for higher order thinking [THOT]). Due to limited resources, only six teachers were trained and observed in this study. Prior to the training, each teacher was observed on two occasions by two different observers with FPMS summative instrument and on two occasions by two different observers with the THOT instrument. Each teacher that was observed had approximately 23 students in the class. Training lasted for 12 weeks and some sessions were spent on developing and critiquing thinking-skill lesson plan. Lessons were developed by the teachers and critiqued by the research team. After the training, teachers were observed on two occasions by two different observers using FPMS summative instrument and the THOT DOMAIN 2 instrument. Findings showed that training with THOT improved higher order teaching performance; however, essential teacher performance scores, as measured by FPMS, tended to remain fairly stable. The authors' affirmation to effect change, should start with providing teachers with specific training in higher order teaching in both preservice and in-service teacher education program.

Summary

Different instructional strategies/teacher methodologies have been proven to impact student performance such as student academic achievement, and student behavior. Evidence of that is shown from data from the review of literature.

Varied ability is a problem across the country in public schools. Teachers are having problems teaching learners of varied abilities, accommodating disabilities, linguistic challenges, and other unique abilities in their classrooms. Today's students enter the classroom with different learning experiences and prior knowledge. Students'

academic achievement ranged from high to low and teachers are struggling on how to appropriately implement lessons that will allow all students to reach their full potential (Holloway, 2000). Special education teachers, along with other support staff, are concerned that the students they see on a daily basis are not receiving the proper support in the classroom (Ferguson, 1999). Teachers are searching for ways to reach all learners in their classrooms. A major drawback of traditional instruction is that many teachers “teach to the middle” (Haager & Klinger, 2005), which means that the needs of a growing number of students will go unmet. Level three students or those that performed at a high academic level are often finished with their work early and often are left unchallenged. Level one students, those that perform below average academically, need constant support and redirection which take away the teacher’s instruction time. Level two or the average students are the only students that benefit the most from the lessons. Same-age students differ remarkably in their life circumstances, past experiences, and readiness to learn and as such have significant impact on the content and pace of instruction (Tomlinson, 2000). Teachers’ delivery of instruction can have direct impact on how students learn and how they behave in the classrooms.

Instructional strategies and teacher methodologies such as higher order thinking skills, differentiated instruction, flexible grouping among others could help all students specially the struggling level 1 students. Students’ previous knowledge and experiences can be used in instruction through use of experiential education approach of higher order thinking skills which have been proven successful even among level one students. Students are found to be more engaged in the learning process as a result of different

instructional methods introduced in the classrooms. Students learning through different strategies would help raise test scores and improve student behavior.

CHAPTER III

THEORETICAL FRAMEWORK

It was proposed that students' performance would improve if teachers use instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills (HOTS). However, teachers' perceptions could vary by control variables such as teachers'/students' demographic variables: grade level, class size, students' socioeconomic status, and teacher experience. They, along with other independent variables, help in determining how effective teachers are in implementing the different instructional strategies.

The Theoretical Framework of the study and student performance outcomes in relation to selected schools and classroom input variables are presented in Figure 2.

Definition of Variables

Dependent Variables

Student Performance is assessed at two levels: Student academic achievement in mathematics and student behavior or discipline as perceived by teachers.

Student Academic Achievement in Mathematics is defined as the extent to which teachers agree that students have improved in mathematics as tested in students' class participation, class assignments, six-weekly benchmark tests, and number of students who teachers perceived, with gains made throughout the year, will move from level one to level two and from level two to level three.

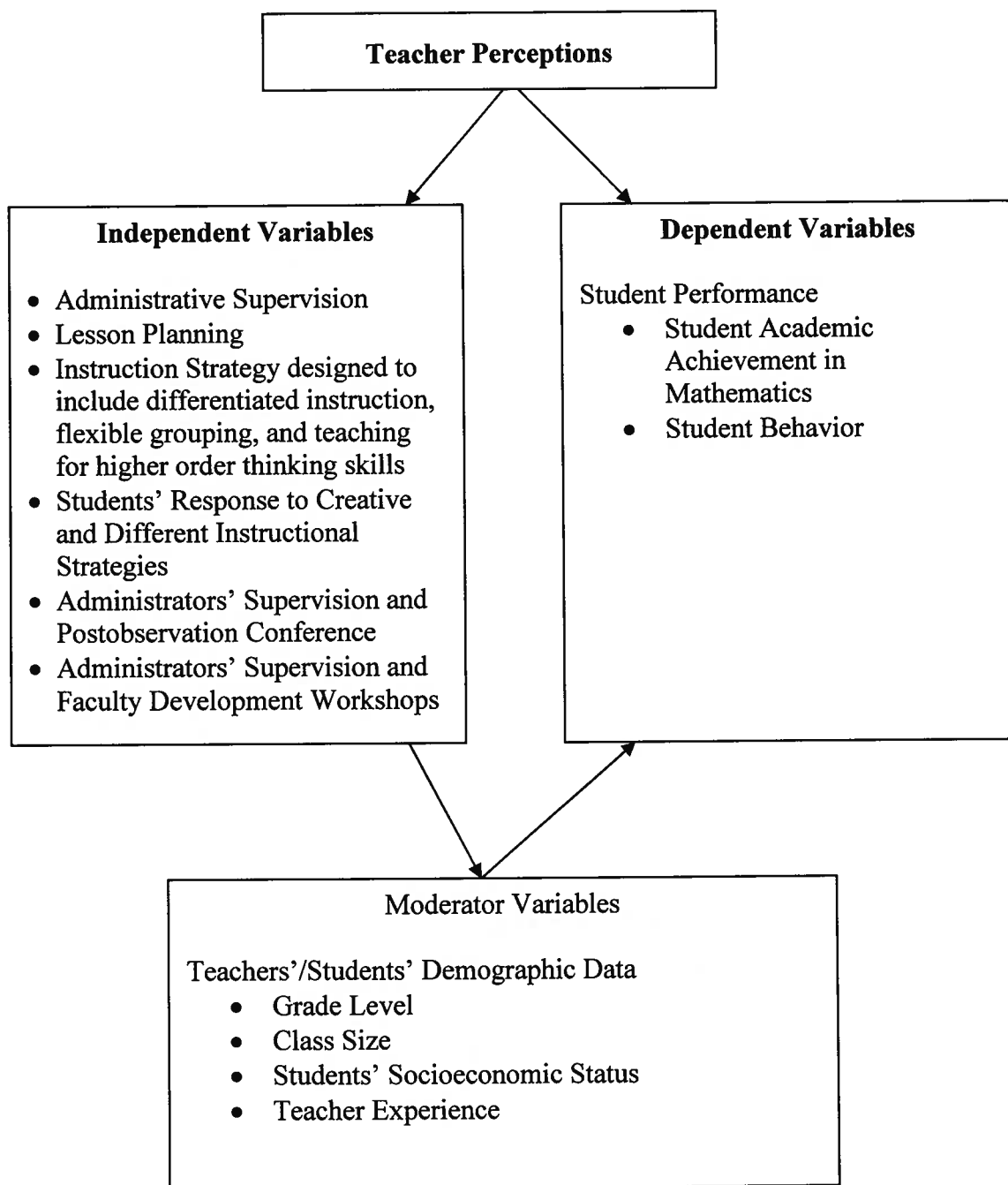


Figure 2. Theoretical Framework

Student Behavior, for the purpose of this study, is defined as the extent to which teachers perceived students' conduct in the classrooms and throughout the building by the total number of discipline incidents and number of office referrals during the 2010-2011 school year.

Independent Variables

For the purpose of this study:

Administrative Supervision is defined as the extent to which administrators emphasized at faculty and grade level meetings instructional leadership style in helping teachers identify weak learners, and students on level one based on last year's CRCT result, determine causes for poor performance and focus on differentiated instruction, flexible grouping and use of students' experiences to teach for higher order thinking skills as action plan for remediation.

Lesson Planning is defined as the extent to which the lesson planning follows an achievement oriented design to meet the different needs of the diverse student population by identifying weak learners, determining causal variables and selecting different instructional strategies for teaching and redelivering instruction.

Teachers' Use of Instruction Strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills is defined as the extent to which teachers defined instruction strategy to include differentiated instruction, flexible grouping and teaching for higher order thinking skills for use in redelivering instruction in small group settings or individualized instruction based on students' performance after evaluation and assessment of the lessons. Teachers can use

these strategies to plan lessons so as to meet the needs of varied and diverse learners in the classrooms. Teachers can promote critical thinking in relation to students' experience by asking questions that require responses using: application, analysis, synthesis, evaluation and creating in place of remembering and understanding.

Students' Responsiveness to Creative and Different Instructional Strategies

is defined as the extent to which teachers in delivering instruction observe weak students as being responsive to creative strategies in terms of acquisition of knowledge and use of higher order thinking skills.

Administrators' Supervision and Postobservation Conference is defined as the extent to which administrators in postobservation conferences emphasize the need for different instructional strategies such as differentiated instruction, flexible grouping, and the effectiveness of the use of students' experiences in teaching for higher order thinking skills and behavior modification strategies to help with classroom management.

Administrators' Supervision and Faculty Development Workshops is defined as the extent to which administrators provide workshops and in-service trainings to help improve teachers' professional growth in the areas of different instructional strategies including teaching for higher order thinking skills, writing lesson plan, and managing students' behavior.

Moderator Variables

Moderator variables are variables that are measured, or selected by the researcher to discover whether they modify the relationship of the independent variables. In this

study they are: grade level, class size, students' socioeconomic status, and teacher experience.

- **Grade Level** refers to the grade level a teacher is teaching.
- **Class Size** study refers to the number of students taught by a teacher in one classroom.
- **Students' Socioeconomic Status** is defined as the percentage of students in the class that are eligible for free or reduced lunch.
- **Teacher Experience** is defined as the number of years, a teacher has been teaching since graduating from college or university.

Explanation of Linkages among Variables

According to Persaud (2008), numerous leadership and teaching strategies were suggested to impact student achievement. But the impact on standardized tests as a systematic process over time was hardly demonstrated. Similarly several instructional programs were installed in schools that could not be demonstrated to impact students' performance systematically over time. Two strategies that are proposed to impact student performance are differentiated instruction and flexible groups while teaching for higher order thinking skills. However, Dewey and Freire (1973) suggest that teaching to students' experiences is essential for weak students to learn cognitive skills. Bloom's Taxonomy defines higher order thinking skills in terms of transformation of knowledge into its analytical components so as to test its application to different situations for evaluating relative effectiveness and creating or inferring new knowledge. Standardized tests tend to assess students' performance on these dimensions. According to Persaud

(2008), for any strategy to enhance the teaching of higher order thinking skills, it has to be emphasized through the system. That is, the principal has to emphasize it, grade level teams must demonstrate its implementation, and teacher method of planning for delivery must emphasize it operationally as impacting students' responsiveness. Further, administrators must evaluate its effectiveness during teacher observation and postevaluation conference. In addition, teachers need to construct tests that measure student performance in alignment with the CRCT. This chain reaction and feedback system is essential for weak students' growth in higher order thinking skills. Therefore, in this study, it was intended to determine the extent to which flexible grouping and differentiated instruction utilize students' experiences as the basis for teaching higher order thinking skills. Further, it is expected that if administrators emphasize the process throughout the system and evaluate its effectiveness for feedback purposes with teachers, then students' improvement in higher order thinking skills might be observed or perceived by teachers. Therefore, in planning for instruction using differentiated instruction and flexible grouping, those teachers that perceive the administrators as emphasizing their functions as related to the use of students' experiences to teach for higher order thinking skills in the daily lessons would also perceive students' as responsive and rate improvement on students' performance.

Differentiated Instruction is a strategy designed to deliver the regular curriculum in varied forms so as to be in alignment with the students' varied abilities based on diverse needs, interests and baseline performance. In differentiating instruction, teachers should maintain the same essential curricula while the complexity of the

contents, learning activities and products vary so that all students are challenged according to their learning abilities. Methodologies employed in a classroom must be varied to suit the individual needs of all students. Learning tasks offered to students must be appropriate to the learning needs of students in levels one, two and three based on the previous year's CRCT results and classroom performance rather than just on the grade level and subject being taught.

The use of **flexible grouping by teachers** in their delivery of instruction is designed to allow for collaboration among students as they work together in cooperative learning setting. The uniqueness of flexible grouping is the ability for students to accept differences in abilities and social behaviors and appreciate one another for their various strengths whether in whole class, teacher-led small group, and student-led small group settings. Students participate in activities that require different abilities within the same task. Therefore, if teachers stated that they are practicing flexible grouping, they ought to rate their students as improving in mathematics and behavior.

Dewey (cited in Ives & Obenchain, 2006) suggests that teaching of concepts should not be in abstract but should relate to students everyday life experiences. Constructivists also suggest that students should be involved in the reconstruction of knowledge. For this connection to be made, however, the experience of students must be related to the knowledge and skills to be taught. It would be difficult for teachers to connect difficult concepts in mathematics to student experiences without prior preparation. Darling-Hammond (2000) suggests the need for teacher preparation. The first step in that preparation is to determine the breakdown of the concepts to be taught

into the dimensions of the Bloom's Taxonomy. Second, teachers are encouraged to work as a team to link each dimension of the Bloom's taxonomy to practical and experiential activities and itemize these for classroom use. Third, explanations and questions could be focused to alert students to the linkages between their experiences and the concepts. Test items could be constructed for feedback purposes. Fourth, technology could be used to facilitate the process. Teachers who practice these are likely to rate students as making progress in the areas of mathematics and discipline.

Teachers are expected to utilize differentiated instruction and flexible grouping as strategies to enable students' of varying abilities to function productively in the same classroom. The problem is how to engage both processes in the teaching of higher order thinking skills. The issue is solved if teacher preparation in terms of higher order thinking skills is infused in both processes. Students come to school from different backgrounds, different socioeconomic status (SES), and maturity and readiness levels. These factors should be taken into consideration as lessons are planned and delivered as they could cause variations in students' achievement. Kube and Ratigan (1992), Railsback (2004), and Strickland (1998) argued that varying teaching methods is important but teachers must gain rapport and trust in relationships with their students by engaging students in interesting and relevant lessons, and positively reinforce good responses. Students come to school when lessons are fun, interesting and relevant to them. High motivation and engagement in learning have been linked to reduced dropouts rates and increased levels of student success (Kushman, Sieber, & Harold, 2000). Not all students can learn or understand materials in the same way. The teacher is the expert in

the material being presented and the students choose which way they would like to show mastery. The purpose of teaching for learning is to provide options and let students show their creativity using their intelligence (Lefebvre, 2003). Learning is enhanced when what students are learning in school is connected to their real-life experiences and boosted when they feel they are respected and valued within the context of the school and community (Tomlinson, 2000).

In some interactive classrooms, teachers acknowledge and are sensitive to children's needs, modify lessons and activities to meet the emotional and academic needs of students, form warm, trusting and personal relationships with students, encourage autonomy, affirm and praise desired behaviors, and establish clear rules and instructions. These types of teachers are equipped with knowledge, skills and disposition required to provide students with engaging, challenging but achievable learning opportunities, offer feedback grounded on the process of learning, ask open-ended questions that enhance higher order thinking, and apply concepts taught in class to everyday life-events. They plan lessons to accommodate the varied learning abilities of students in levels one through three. They also modify lessons and activities to meet the academic needs of students at risk; the level one students while on the other hand, plan to challenge students on level three with learning opportunities grounded in the application, analysis, evaluation and creation of knowledge (the high cadre of Bloom's Taxonomy). If teacher methodology and instructional strategies are planned based on the results of existing data from classroom assessment and evaluation, improvement in students' performance, academic achievement in mathematics, and behavior could occur.

Research Questions

- RQ1: Is there a significant relationship between administrative supervision and teachers' perceptions of student achievement in mathematics?
- RQ2: Is there a significant relationship between lesson planning and teachers' perceptions of student achievement in mathematics?
- RQ3: Is there a significant relationship between instructional strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills, and teachers' perceptions of student achievement in mathematics?
- RQ4: Is there a significant relationship between students' response to creative and different instructional strategies and teachers' perceptions of student achievement in mathematics?
- RQ5: Is there a significant relationship between administrators' supervision and postobservation conferences about the use of different instructional strategies and teachers' perceptions of student achievement in mathematics?
- RQ6: Is there a significant relationship between administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, high order thinking skills, constructing higher order thinking skills tests, evaluating and research classroom problems and teachers' perceptions of student achievement in mathematics?

- RQ7: Is there a significant relationship between administrative supervision and teachers' perceptions of student behavior?
- RQ8: Is there a significant relationship between lesson planning and teachers' perceptions of student behavior?
- RQ9: Is there a significant relationship between instruction strategies designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills and teachers' perceptions of student behavior?
- RQ10: Is there a significant relationship between students' response to creative and different instructional strategies and teachers' perception of student behavior?
- RQ11: Is there a significant relationship between administrators' supervision and postobservation conferences about the use of instruction strategies designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills and teachers' perceptions of student behavior?
- RQ12: Is there a significant relationship between administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, higher order thinking skills, constructing higher order thinking skills tests, evaluating and research classroom problems and teachers' perceptions of student behavior?

- RQ13: Is there a significant relationship between teachers'/students' demographic data: grade level, class size, students' socioeconomic status, and teacher experience and teachers' perceptions of student behavior?
- RQ14: Is there a significant relationship between teachers'/students' demographics data: grade level, class size, students' socioeconomic status and teacher experience and teachers' perceptions of student behavior?
- RQ15: In a stepwise multiple regression analysis of the data, what are the independent variables that explain student academic achievement in mathematics?
- RQ16: In a stepwise multiple regression analysis of the data, what are the independent variables that explain student behavior?

CHAPTER IV

RESEARCH METHODOLOGY

Research Design

The design of this study was an ex post facto survey design that utilized purposive sampling technique to collect data on all variables under investigation to help answer the research questions. The purposive nature of the design was to ensure diversity in population where population is a representation of high, middle and low performing schools. School demographic variables such as students' socioeconomic status based on number of students on reduced or free lunch status ensured that the differences in the population of interest were identified as equally represented.

Setting and Participants

The sites for this study are 10 elementary schools located in an urban school district in the southeastern part of United States. The sample consisted of 51 elementary school teachers (grades 1-5) from the 10 schools purposively selected. In compliance with the school district's policy, the researcher obtained permission from the central office, the principals and teachers of the participating schools. For the purpose of this study and to maintain strict confidentiality, the name of the school district, participating schools, and teachers were not identified in the study. Sample schools in the study were identified as School A, School B, School C, School D, School E, School F, School G,

School H, School I, and School J. Teachers' participation in this study was voluntary and anonymity of their responses was strictly confidential as was stated in the letter to the teachers.

Instrumentation

Data used to measure all the variables were gathered through questionnaires administered to teachers only. The Teacher Perceptions of School Questionnaire that consisted of 60 items was designed by Dr. Ganga Persaud and the researcher. The variables under investigation in this study were defined based on data drawn from several studies conducted at Clark Atlanta University. Questions were developed for each element of the variable intended to answer the research questions.

The design of the questionnaire is as follows: administrative supervision (items 1-6); lesson planning (items 7-15); instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills (items 16-26); students' response to creative and different instructional strategies (items 27-34); administrators' supervision and postobservation conferences (items 35-40); administrators' supervision and faculty development workshops (items 41-45); student academic achievement in mathematics (items 46-50); student behavior (items 51-54); and teachers/students' demographic data (items 55-60). Responses to the questions were made on a five-point ordinal scale ranging from a value of 1 (Never) to 5 (Always). Teacher rating of students' academic achievement in mathematics and student behavior used a different scale, Likert Scale: 1 = none, 2 = few, 3 = some, 4 = most, and 5 =

almost all. The teacher/student demographic data utilized selecting one appropriate response.

Reliability and Validation

A reliability test using the Statistical Package for the Social Sciences (SPSS) reliability procedure was performed on the instrument used in this study in order to validate the use of the survey instrument. The survey consisted of eight components that measured the following areas: Administrative Supervision (items 1-6); Lesson Planning (items 7-15); Instruction Strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills (items 16-26); Students' Response To Creative and Different Instructional Strategies (items 27-34); Administrators' Supervision and Post Observation Conferences (items 35-40); Administrators' Supervision and Faculty Development workshops (items 41-45); Student Achievement in Mathematics (items 46-50); and Student behavior (items 51-54). The results of the reliability indicate that each of the eight survey components are reliable and are constructed of similar measures (Table 2).

Table 2

Reliability Summary

	Cronbach Alpha
Administrative Supervision	.915
Lesson Planning	.952
Instruction Strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills	.955

Table 2 (continued)

	Cronbach Alpha
Students' Response To Creative and Different Instructional Strategies	.969
Administrators' Supervision and Postobservation Conferences	.969
Administrators' Supervision and Faculty Development Workshops	.921
Student Achievement in Mathematics	.959
Student Behavior	.978

Statistical Analysis

The Statistical Package for the Social Sciences (SPSS) was used to analyze data that were collected in this study. A Pearson Correlation analysis was used to determine if there was a significant relationship between two variables in the respective research question. A multiple linear regression analysis was used to analyze which independent or predictor variable had the most impact on the dependent or outcome variable (student performance).

Confidentiality of Data Treatment

Teachers were the only unit of analysis. All responses and data collected were treated confidentially. Teachers were not identified and data collected, were analyzed for the purpose of dissertation research only. **Individual student** scores from the CRCT or any student's class test scores was not used in the study. **Group** (class) last year's CRCT result data and six-weekly benchmark tests were obtained through the teachers' response to the questionnaires as already stated. The researcher however had no access to the

students' data. Results of the findings will be made available to the school district's central office and to any sample schools that requested for it.

Limitations of the Study

Limitations might impact the findings of this study. The use of the questionnaire in the survey research has many limitations.

1. Respondents may not have felt completely assured by the anonymity policy.
2. Teachers as respondents might have felt that they were also being evaluated indirectly and as such inflate some of their answers to make their school "look good." However, the average score is utilized to minimize the effect.
3. Schools and the school system were not randomly selected. The researcher purposively selected the schools. However, in so far as the background variables might influence teacher perceptions, these were included to assess their contributions to teacher perceptions.
4. Data on the independent variables represent the participants' perceptions and may not be truthful.
5. The questionnaire might not have included all the essential variables that might in one way or another impacted student outcomes.

CHAPTER V

DATA ANALYSIS

The purpose of this study was to examine the relationship between instructional strategies/teacher methodologies and student performance: student academic achievement in mathematics and student behavior. The independent variables used were: (a) Administrative Supervision; (b) Lesson Planning; (c) Instruction Strategy designed to include differentiated instruction, flexible Grouping and teaching for higher order thinking skills; (d) Students' Response to Creative and Different Instructional Strategies; (e) Administrators' Supervision and Postobservation Conferences; and (f) Administrators' Supervision and Faculty Development Workshops. The dependent variables were teachers' perception of student academic achievement in mathematics and student behavior. The moderator variables were (a) Grade Level, (b) Class Size, (c) Students' Socioeconomic Status, and (d) Teacher Experience. The data were collected from 10 different schools with a total sample of 51 teachers who participated in the survey.

The Statistical Package for the Social Sciences (SPSS) version 14 was used to summarize the data. The following statistical procedures were used: Pearson Correlation and Multiple Regression Analysis. The data were presented in two parts: the statistical distribution of the variables to observe the extent of their variations and the results and

analyses of the statistical tests in response to the identified research questions. All of the statistical procedures were tested at the (0.05) significance level.

The independent variables were categorized into the six major theoretical framework dimensions and dependent variables into two (Table 3).

Table 3

The Independent and Dependent Variables

Variables	Survey Items
Administrative Supervision	1-6
Lesson Planning	7-15
Instruction Strategy designed to include differentiated Instruction, flexible grouping and teaching for higher order thinking skills	16-26
Students' Response to Creative and Different Instructional Strategies	27-34
Administrators' Supervision and Postobservation Conferences	35-40
Administrators' Supervision and Faculty Development Workshops	41-45
Student Achievement in Mathematics	46-50
Student Behavior	51-54

Statistical Distributions of the Variables

The study had a sample size of 10 elementary schools with a total of 51 teachers utilized in the study. It was necessary to indicate the degree of variances among the competencies in terms of the means scores of the teacher respondents on the various competencies as the basis for determining if the variances would relate to student

performance. Table 4 provides data to indicate teachers' perceptions on the various dimensions. The mean scores were as follows: administrative supervision (mean = 4.01), lesson planning (mean = 3.81), instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills (mean = 3.43), students' response to creative and different instructional strategies (mean = 3.11), administrators' supervision and postobservation conferences (mean = 3.58), administrators' supervision and faculty development workshops (mean = 3.45). Table 5 presents a descriptive analysis of the Dependent and Moderator variables.

Table 4

Descriptive Analysis of the Independent Variables

	Mean	STD.	S.E.
Administrative Supervision	4.01	.848	.118
Lesson Planning	3.81	.922	1.29
Instruction Strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills	3.43	1.05	.148
Students' Response To Creative and Different Instructional Strategies	3.11	.967	.135
Administrators' Supervision and Post- Observation Conferences about the use of differentiated instruction, flexible grouping and teaching for higher order thinking skills in relationship to students' experiences	3.58	1.08	.152

Table 4 (continued)

	Mean	STD.	S.E.
Administrators' Supervision and Faculty Development Workshops that cover strategies related to standardized tests, discipline problems, higher order thinking skills, constructing higher order thinking skill tests, evaluating and research classroom problems	3.45	1.06	.149

Table 5

Descriptive Analysis of the Dependent and Moderator Variables

	Mean	STD.	S.E.
Grade Level	3.15	1.179	.172
Class Size	2.15	.875	.126
Students' Socioeconomic Status	4.40	1.195	.178
Teacher Experience	3.55	1.062	.066
Student Achievement	2.82	1.023	.143
Student Behavior	2.68	1.154	.161

In order to test these relationships, A Pearson Correlation and Regression Analysis were used to test each of the research questions. Pearson Correlation tests two variables at a time (independent and dependent) whereas Regression Analysis tests all the independent variables simultaneously.

Research Questions Results

RQ1: Is there a significant relationship between administrative supervision and teachers' perceptions of student achievement in mathematics?

The data with respect to this research question are provided in Table 6. In the table, the following significant relationships are observed: student achievement in mathematics was not significantly related to administrative supervision. Student achievement in mathematics had a Pearson correlation of $r(51) = 0.243$, $p = 0.086$, with administrative supervision was not significant at greater than 0.05 significance level (calculated value being 0.086). There was no significant relationship between administrative supervision and teachers' perceptions of student achievement in mathematics.

RQ2: Is there a significant relationship between lesson planning and teachers' perceptions of student achievement in mathematics?

The data with respect to this research question are provided in Table 6. In the table, the following significant relationships are observed: student achievement in mathematics was significantly related to identifying lesson planning problems.

Table 6

Correlation of Teachers' Perceptions of Student Achievement in Mathematics and Student Behavior with Independent Variables

	Variables	
	Student Achievement	Student Behavior
Administrative Supervision		
R	.243	.183
Sig.	.086	.199
Lesson Planning		
R	.426*	.230
Sig.	.002	.105
Instruction Strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills		
R	.536*	.288*
Sig.	.000	.043
Student's Response to Creative and Different Instructional Strategies		
R	.568*	.590*
Sig.	.000	.000
Administrators' Supervision and postobservation Conferences about the use of differentiated instruction, flexible grouping,		

Table 6 (continued)

	Variables	
	Student Achievement	Student Behavior
and teaching for higher order thinking skills in relationship to students' experiences		
R	.586*	.348*
Sig.	.000	.012
Administrators' Supervision and Faculty Development Workshops that cover strategies Related to standardized tests, discipline Problems, higher order thinking skills, Constructing higher order thinking skill tests, Evaluating and research classroom problems		
R	.580*	.492*
Sig.	.000	.000

* = sig. at the .05 level

Student achievement in mathematics had a Pearson correlation of $r(51) = 0.426$, $p = 0.002$, with lesson planning was significant at less than 0.05 significance level (calculated value being 0.002). There was a significant positive correlation between lesson planning and teachers' perceptions of student achievement in mathematics.

RQ3: Is there a significant relationship between instructional strategy designed to include differentiated instruction, flexible grouping and teaching for

higher order thinking skills, and teachers' perceptions of student achievement in mathematics?

The data with respect to this research question are provided in Table 6. In the table, the following significant relationships are observed: student achievement in mathematics was significantly related to instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills. Student achievement in mathematics had a Pearson correlation of $r(51) = 0.536$, $p = 0.000$, instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills was significant at less than 0.05 significance level (calculated value being 0.000). There was a significant positive correlation between instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills and teachers' perceptions of student achievement in mathematics.

RQ4: Is there a significant relationship between students' response to creative and different instructional strategies and teachers' perceptions of student achievement in mathematics?

The data with respect to this research question are provided in Table 6. In the table, the following significant relationships are observed: student achievement in mathematics was significantly related to students' response to creative and different instructional strategies. Student achievement in mathematics had a Pearson correlation of $r(51) = 0.568$, $p = 0.000$, with students' response to creative and different instructional strategies was significant at less than 0.05 significance level (calculated value being

0.000). There was a significant relationship between students' response to creative and different instructional strategies and teachers' perceptions of student achievement in mathematics.

RQ5: Is there a significant relationship between administrators' supervision and postobservation conferences about the use of different instructional strategies and teachers' perceptions of student achievement in mathematics?

The data with respect to this research question are provided in Table 6. In the table, the following significant relationships are observed: student achievement in mathematics was significantly related to postobservation conferences with administrators about the use of instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills in relationship to students' experiences. Student achievement in mathematics had a Pearson correlation of $r(51) = 0.568$, $p = 0.000$, with postobservation conferences with administrators about the use of instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills in relationship to students' experiences was significant at less than 0.05 significance level (calculated value being 0.000). There was a significant positive correlation between administrators' supervision and postobservation conferences about the use of instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills in relationship to students' experiences and teachers' perceptions of student achievement in mathematics.

RQ6: Is there a significant relationship between administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, high order thinking skills, constructing higher order thinking skills tests, evaluating and research classroom problems and teachers' perceptions of student achievement in mathematics?

The data with respect to this research question are provided in Table 6. In the table, the following significant relationships are observed: student achievement in mathematics was significantly related to administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, higher order thinking skills, constructing higher order thinking skill tests, evaluating and research classroom problems. Student achievement in mathematics had a Pearson correlation of $r(51) = 0.580$, $p = 0.000$, with administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, higher order thinking skills, constructing higher order thinking skill tests, evaluating and research classroom problems was significant at less than 0.05 significance level (calculated value being 0.000). There was a significant positive correlation between administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, higher order thinking skills, constructing higher order thinking skill tests, evaluating and research classroom problems and teachers' perceptions of student achievement in mathematics.

RQ7: Is there a significant relationship between administrative supervision and teachers' perceptions of student behavior?

The data with respect to this research question are provided in Table 6. In the table, the following significant relationships are observed: student behavior was not significantly related to administrative supervision. Student behavior had a Pearson correlation of $r(51) = 0.183$, $p = 0.199$, with administrative supervision was not significant at greater than 0.05 significance level (calculated value being 0.199). There was no significant relationship between administrative supervision and teachers' perceptions of student behavior.

RQ8: Is there a significant relationship between lesson planning and teachers' perceptions of student behavior?

The data with respect to this research question are provided in Table 6. In the table, the following significant relationships are observed: student behavior was not significantly related to lesson planning. Student behavior had a Pearson correlation of $r(51) = 0.230$, $p = 0.105$, with lesson planning was not significant at greater than 0.05 significance level (calculated value being 0.105). There was no significant relationship between lesson planning and teachers' perceptions of student behavior.

RQ9: Is there a significant relationship between instruction strategies designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills and teachers' perceptions of student behavior?

The data with respect to this research question are provided in Table 6. In the table, the following significant relationships are observed: student behavior was significantly related to instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills. Student behavior had a Pearson correlation of $r(51) = 0.288$, $p = 0.043$, with instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills was significant at less than 0.05 significance level (calculated value being 0.043). There was a significant positive correlation between instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills and teachers' perceptions of student behavior.

RQ10: Is there a significant relationship between students' response to creative and different instructional strategies and teachers' perception of student behavior?

The data with respect to this research question are provided in Table 6. In the table, the following significant relationships are observed: student behavior was significantly related to students' response to creative and different instructional strategies. Student behavior had a Pearson correlation of $r(51) = 0.590$, $p = 0.000$, with students' response to creative and different instructional strategies was significant at less than 0.05 significance level (calculated value being 0.000). There was a significant relationship between students' response to creative and different instructional strategies and teachers' perceptions of student behavior.

RQ11: Is there a significant relationship between administrators' supervision and postobservation conferences about the use of instruction strategies designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills and teachers' perceptions of student behavior?

The data with respect to this research question are provided in Table 6. In the table, the following significant relationships are observed: student behavior was significantly related to administrators' supervision and postobservation conferences about the use of instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills in relationship to students' experiences. Student behavior had a Pearson correlation of $r(51) = 0.348$, $p = 0.012$, with administrators' supervision and postobservation conferences about the use of instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills in relationship to students' experiences was significant at less than 0.05 significance level (calculated value being 0.012). There was a significant positive correlation between administrators' supervision and postobservation conferences about the use of instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills in relationship to students' experiences and teachers' perceptions of student behavior.

RQ12: Is there a significant relationship between administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, higher order thinking skills,

constructing higher order thinking skills tests, evaluating and research classroom problems and teachers' perceptions of student behavior?

The data with respect to this research question are provided in Table 6. In the table, the following significant relationships are observed: student behavior was significantly related to administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, higher order thinking skills, constructing higher order thinking skill tests, and evaluating and research classroom problems. Student behavior had a Pearson correlation of $r(51) = 0.492$, $p = 0.000$, with administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, higher order thinking skills, constructing higher order thinking skill tests, evaluating and research classroom problems was significant at less than 0.05 significance level (calculated value being 0.000). There was a significant positive correlation between administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, higher order thinking skills, constructing higher order thinking skills tests, evaluating and research classroom problems and teachers' perceptions of student behavior.

RQ13: Is there a significant relationship between teachers'/students' demographic data: grade level, class size, students' socioeconomic status, and teacher experience and teachers' perceptions of student behavior?

The data with respect to this research question are provided in Table 7. In the table, the following significant relationships are observed: student achievement in mathematics was not significantly related to grade level. Student achievement in mathematics had a Pearson correlation of $r(51) = 0.073$, $p = 0.627$, with grade level was significant at greater than 0.05 significance level (calculated value being 0.627). Student achievement in mathematics was not significantly related to class size. Student achievement in mathematics had a Pearson correlation of $r(51) = -0.219$, $p = 0.135$, with class size was not significant at greater than 0.05 significance level (calculated value being 0.135). Student achievement in mathematics was not significantly related to students' socioeconomic status. Student achievement in mathematics had a Pearson correlation of $r(51) = 0.247$, $p = 0.102$, with socio-economic status was not significant at greater than 0.05 significance level (calculated value being 0.102). Student achievement in mathematics was not significantly related to teachers' experience. Student achievement in mathematics had a Pearson correlation of $r(51) = 0.161$, $p = 0.270$, with teacher experience not significant at greater than 0.05 significance level (calculated value being 0.270). There was no significant relationship between teachers/students' demographics variables: grade level, class size, students' socioeconomic status, and teacher experience and teachers' perceptions of student achievement in mathematics.

Table 7

Correlation of Teachers' Perceptions of Student Achievement and Student Behavior with Teacher/Student Demographic Variables

		Student Achievement	Student Behavior
Grade Level	r	.073	.157
	sig.	.627	.293
Class Size	r	-.219	.000
	sig.	.135	.997
Students' Socioeconomic Status	r	.247	-.045
	sig.	.194	.990
Teacher Experience	r	.161	.115
	sig.	.270	.432

* = sig. at the .05 level.

RQ14: Is there a significant relationship between teachers'/students' demographics data: grade level, class size, students' socioeconomic status and teacher experience and teachers' perceptions of student behavior?

The data with respect to this research question are provided in Table 7. In the table, the following significant relationships are observed: student behavior was not significantly related to grade level. Student behavior had a Pearson correlation of $r(51) = 0.157$, $p = 0.293$, with grade level was not significant at greater than 0.05 significance

level (calculated value being 0.293). Student behavior was not significantly related to class size. Student behavior had a Pearson correlation of $r(51) = 0.000$, $p = 0.997$, with class size was not significant at greater than 0.05 significance level (calculated value being 0.997). Student behavior was not significantly related to students' socio-economic status. Student behavior had a Pearson correlation of $r(51) = -0.045$, $p = 0.770$, with socioeconomic status not significant at greater than 0.05 significance level (calculated value being 0.770). Student behavior was not significantly related to teacher experience. Student behavior had a Pearson correlation of $r(51) = 0.115$, $p = 0.432$, with teacher experience not significant at greater than 0.05 significance level (calculated value being 0.432). There was no significant relationship between teachers/ students' demographics variables: grade level, class size, students' socio-economic status, and teacher experience and teachers' perceptions of student behavior.

Results of Regression Analysis

A stepwise regression analysis was conducted to determine the separate and independent effect of each independent variable on student performance (student academic achievement in mathematics and student behavior) as the dependent variable. In this method the dependent variable was placed in the equation followed by the independent variables that were most associated with dependent variables in the correlation analysis, while the other variables were held constant. A beta weight was calculated. Similarly, the other variables were introduced in successive order and the respective beta weights calculated until all variances were taken up. Independent variables not making any contributions to the dependent were excluded. Therefore, the

standardized beta coefficient was calculated for each independent variable while controlling for the effects of the other variables. The standardized beta coefficient indicated that a unit change in the respective independent variables contributed or explained the specified beta coefficient change on the dependent.

RQ15: In a stepwise multiple regression analysis of the data, what are the independent variables that explain student academic achievement in mathematics?

In order to provide data for this research question, student achievement in mathematics was entered as the dependent variable. Components such administrative supervision, administrators' supervision and postobservation conferences, lesson planning, instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills strategies, students' response to creative and different instructional strategies, administrators' supervision and faculty development workshops, grade level, class size, students' socio-economic status, and teacher experience were entered into the equation as independent variables because it was the purpose of the study to determine if one or all contributed to student achievement in mathematics. All of the independent variables were tested simultaneously to study the effect on the use of instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills strategies and the dependent variable; student academic achievement in mathematics. Results of the stepwise regression analysis are shown in Table 8.

Table 8

Results of Regression Analysis: Student Achievement in mathematics in Relation to the Selected Independent Variables (N =51 Teachers)

	SE	Beta	t	p
(Constant)	.374		1.89	.065
Supervision and Post Observation Conferences	.100	.664	-2.87	.000*

Dependent Variable Student Achievement

*p < 0.05; Adjusted R Square = 0.428; F Ratio = 36.98

In Table 8, administrators' supervision and postobservation conferences about the use of instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills made a beta coefficient of (B = .664, p = 0.000) to student achievement in mathematics that was significant at less than 0.05 level (calculated value = 0.000). The other independent variables such as: administrative supervision, lesson planning, instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills strategies, students' response to creative and different instructional strategies, administrators' supervision and faculty development workshops, grade level, class size, students' socioeconomic status, and teacher experience, were excluded from the equation, meaning they were not significant.

RQ16: In a stepwise multiple regression analysis of the data, what are the independent variables that explain student behavior?

In order to provide data for this research question, student behavior was entered as the dependent variable. The independent components such administrative supervision, administrators' supervision and postobservation conferences about the use of instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills; lesson planning; instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills, students' response to creative and different instructional strategies, administrators' supervision and faculty development workshops, grade level; class size; students' socioeconomic status, and teacher experience, were entered into the equation as independent variables because it was the purpose of the study to determine if one or all contributed to student behavior.

The results of stepwise regression analysis are shown in Table 9. In the table, students' response to creative and different instructional strategies made a beta coefficient of ($B = .549$, $p = 0.000$) to student behavior that was significant at less than 0.05 level (calculated value = 0.000). The other independent variables such as: administrative supervision; lesson planning, instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills, administrators' supervision and faculty development workshops, grade level, class size, students' socioeconomic status, and teacher experience were excluded from the equation, meaning they were not significant.

Table 9

Results of Regression Analysis: Student Behavior in Relation to the Selected Independent Variables (N =51 Teachers)

	SE	Beta	t	p
(Constant)	.488		1.30	.197
Students' Response to Creative and Different Instructional Strategies	.148	.549	4.50	.000*

Dependent Variable Student Behavior

*p < 0.05; Adjusted R Square = 0.287; F Ratio = 20.29

Summary of Findings

RQ1: Is there a significant relationship between administrative supervision and teachers' perceptions of student achievement in mathematics?

There was no significant relationship between administrative supervision and teachers' perceptions of student achievement in mathematics.

RQ2: Is there a significant relationship between lesson planning and teachers' perceptions of student achievement in mathematics?

There was a significant positive correlation between lesson planning and teachers' perceptions of student achievement in mathematics. When teachers' perceptions increase in terms of lesson planning their perception of student achievement also increases.

RQ3: Is there a significant relationship between instructional strategy designed to include differentiated instruction, flexible grouping and teaching for

higher order thinking skills, and teachers' perceptions of student achievement in mathematics?

There was a significant positive correlation between instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills and teachers' perceptions of student achievement in mathematics. When teachers' perceptions increase in terms of their use of instruction strategy designed to include differentiated instruction, flexible grouping, and higher order thinking skills their perception of student achievement also increases.

RQ4: Is there a significant relationship between students' response to creative and different instructional strategies and teachers' perceptions of student achievement in mathematics?

There was a significant relationship between students' response to creative and different instructional strategies and teachers' perceptions of student achievement in mathematics. When teachers' perceptions increase in terms of students' response to creative and different instructional strategies their perception of student achievement in mathematics also increases.

RQ5: Is there a significant relationship between administrators' supervision and postobservation conferences about the use of different instructional strategies and teachers' perceptions of student achievement in mathematics?

There was a significant positive correlation between administrators' supervision and postobservation conferences about the use of instruction strategy designed to include

differentiated instruction, flexible grouping and teaching for higher order thinking skills in relationship to students' experiences and teachers' perceptions of student achievement in mathematics. When teachers' perceptions increase in terms of their use of postobservation conferences with administrators about the use of instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills in relationship to students' experiences their perception of student achievement in mathematics also increases.

RQ6: Is there a significant relationship between administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, high order thinking skills, constructing higher order thinking skills tests, evaluating and research classroom problems and teachers' perceptions of student achievement in mathematics?

There was a significant positive correlation between administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, higher order thinking skills, constructing higher order thinking skill tests, evaluating and research classroom problems and teachers' perceptions of student achievement in mathematics. When teachers' perceptions increase in terms of their use of faculty development workshops that cover strategies related to standardized tests, discipline problems, higher order thinking skills, constructing higher order thinking skill tests, evaluating and research classroom problems their perception of student achievement in mathematics also increases.

RQ7: Is there a significant relationship between administrative supervision and teachers' perceptions of student behavior?

There was no significant relationship between administrative supervision and teachers' perceptions of student behavior.

RQ8: Is there a significant relationship between lesson planning and teachers' perceptions of student behavior?

There was no significant relationship between lesson planning and teachers' perceptions of student behavior.

RQ9: Is there a significant relationship between instruction strategies designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills and teachers' perceptions of student behavior?

There was a significant positive correlation between instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills and teachers' perceptions of student behavior. When teachers' perceptions increase in terms of their use of instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills their perception of student behavior also improves.

RQ10: Is there a significant relationship between students' response to creative and different instructional strategies and teachers' perception of student behavior?

There was a significant relationship between students' response to creative and different instructional strategies and teachers' perceptions of student behavior. When teachers' perceptions increase in terms of students' response to creative and different instructional strategies their perception of student behavior also improves.

RQ11: Is there a significant relationship between administrators' supervision and postobservation conferences about the use of instruction strategies designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills and teachers' perceptions of student behavior?

There was a significant positive correlation between administrators' supervision and postobservation conferences about the use of instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills in relationship to students' experiences and teachers' perceptions of student behavior. When teachers' perceptions increase in terms of administrators' supervision and postobservation conferences about the use of instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills in relationship to students' experiences their perception of student behavior also improves.

RQ12: Is there a significant relationship between administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, higher order thinking skills,

constructing higher order thinking skills tests, evaluating and research classroom problems and teachers' perceptions of student behavior?

There was a significant positive correlation between administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, higher order thinking skills, constructing higher order thinking skill tests, evaluating and research classroom problems, and teachers' perceptions of student behavior. When teachers' perceptions increase in terms administrators' supervision and faculty development workshops that cover strategies related to standardized tests, discipline problems, higher order thinking skills, constructing higher order thinking skill tests, evaluating and research classroom problems their perception of student behavior also improves.

RQ13: Is there a significant relationship between teachers'/students' demographic data: grade level, class size, students' socioeconomic status, and teacher experience and teachers' perceptions of student behavior?

There was no significant relationship between teachers'/students' demographics variables: grade level, class size, students' socioeconomic status, and teacher experience and teachers' perceptions of student achievement in mathematics.

RQ14: Is there a significant relationship between teachers'/students' demographics data: grade level, class size, students' socioeconomic status and teacher experience and teachers' perceptions of student behavior?

There was no significant relationship between teachers'/students' demographics variables: grade level, class size, students' socioeconomic status, and teacher experience and teachers' perceptions of student behavior

RQ15: In a stepwise multiple regression analysis of the data, what are the independent variables that explain student academic achievement in mathematics?

The results indicated that administrators' supervision and postobservation conferences about the use of instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills had a significant influence on student achievement in mathematics.

RQ16: In a stepwise multiple regression analysis of the data, what are the independent variables that explain student behavior?

The results indicated that students' response to creative and different instructional strategies had a significant influence on student behavior.

CHAPTER VI

FINDINGS, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

In this study, the relationship between instructional strategies/teacher methodologies and student performance: student academic achievement in mathematics and student behavior was examined. It was proposed that instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills among others may have a positive effect on students' achievement in mathematics and their behavior in the classrooms.

The dependent variables are teachers' perception of student academic achievement in mathematics and student behavior. The independent variables are administrative supervision, lesson planning, instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills, students' response to creative and different instructional strategies, administrators' supervision and postobservation conferences, and administrators' supervision and faculty professional development workshops. The moderator variables—grade level, class size, students' socioeconomic status, and teacher experience—were also used in the study. Data for this study were collected through a 60-item questionnaire instrument from 10 elementary schools with a total sample of 51 teachers who participated in the survey. The Statistical Package for the Social Sciences (SPSS) was used to summarize

the data. The following statistical procedures were used: Pearson Correlation, and Multiple Regression Analysis. The data were presented in two parts: the statistical distribution of the variables to observe the extent of their variations, and the results and the analyses of statistical tests in response to the identified research questions. All of the statistical procedures were tested at the (0.05) significance level. It was expected that instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills would have the most significant relationship with student academic achievement in mathematics and student behavior more than the other variables. Administrative supervision and demographic data; the moderator variables had no significant relationship on student academic achievement in mathematics and student behavior. It was also expected that some variables more than others, might have more positive relationship than others in explaining student performance.

Summary of Findings

The most significant finding of this study indicated that in Pearson Correlation student achievement in mathematics has a statistically significant relationship with four independent variables all relating directly to instructional strategies and teacher methodologies (see Table 6 in Chapter V).

The results of Pearson Correlation showed a significant relationship at the 0.05 level between administrators' supervision and postobservation conferences about the emphasis on the use of instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills in relationship to students'

experiences and student achievement in mathematics ($r = .586$) and student behavior ($r = .348$).

Results of the Pearson Correlation also showed a significant relationship at the 0.05 level between teachers' use of instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills in relationship to students experiences and teachers' perceptions of student achievement in mathematics ($r = .536$) and student behavior ($r = .288$).

Results of the Pearson Correlation showed that students' response to creative and different instructional strategies had a significant relationship teachers' perceptions of student behavior. This variable had the strongest correlation on both teachers' perceptions of student achievement in mathematics and student behavior more than any other variables. Student achievement in mathematics had a Pearson Correlation of ($r = .568$) and student behavior had a Pearson Correlation of ($r = .590$). The results are consistent with the findings in other research studies about the use of differentiated instruction (Ellis, Ellis, Huemann, & Stolarik, 2007).

Results of the Pearson Correlation indicated that there was a strong correlation between administrators' supervisory role in terms of providing professional /faculty development workshops related to standardized tests, constructing higher order thinking skills tests, discipline problems, evaluating and research classroom problems and teachers' perceptions of students achievement in mathematics and student behavior. Student achievement in mathematics had a Pearson Correlation of ($r = .580$) and student behavior had a Pearson Correlation of ($r = .492$).

The results of the findings also showed that there was a strong positive correlation between lesson planning and teachers' perceptions of student achievement in mathematics ($r = .426$). There was no correlation between lesson planning and student behavior ($r = .230$). There was no significant relationship between administrative supervision and student achievement in mathematics or student behavior. Student achievement in mathematics had a Pearson Correlation of ($r = .243$) and student behavior had a Pearson Correlation of ($r = .183$).

The results of the Multiple Regression analysis showed that student achievement in mathematics was entered as a dependent variable with components such as administrative supervision, lesson planning, instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills, students' response to creative and different instructional strategies, administrators' supervision and postobservation conference, and administrative supervision and professional/faculty development. Administrators' supervision and postobservation conferences made a beta coefficient of ($B = .664, p = 0.000$) to student achievement in mathematics that was significant at less than 0.05 level (calculated value = 0.000). The other independent variables were excluded from the equation, meaning they were not significant.

The results of the Multiple Regression analysis indicated that student behavior was entered as dependent variable with independent components such as administrative supervision, lesson planning, instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills, students'

response to creative and different instructional strategies, administrators' supervision and postobservation conference, and administrators' supervision and professional/faculty development. Students' responses to creative and different instructional strategies made a beta coefficient of ($B = .549$, $p = 0.000$) to student behavior that was significant at less than 0.05 level (calculated value = 0.000). The other independent variables were excluded from the equation, meaning they were not significant.

The results of the Multiple Regression analysis showed that teachers' perception of student academic achievement in mathematics was entered as a dependent variable with moderator components; teachers/students' demographic variables such as grade level, class size, students' socioeconomic status, and teacher experience. There was no significant relationship between teachers/students' demographic variables and teachers' perceptions of student achievement in mathematics. All of the demographic variables were excluded from the equation, meaning they were not significant.

The Multiple Regression analysis indicated that teachers' perception of student behavior was entered as dependent variable with moderator components; teachers /students' demographic variables such as grade level, class size, students' socioeconomic status, and teacher experience. There was no significant relationship between teachers /students' demographic variables and teachers' perceptions of student behavior.

Overall, the results of the regression analysis indicated that students' response to creative and different instructional strategies and administrators' supervision and postobservation conferences about the use of instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills

made a significant contribution at the .05 level to the outcome variables: student academic achievement in mathematics and student behavior.

Conclusion

The conclusion is that instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills and students' response to creative and different instructional strategies predicted student outcomes: student achievement in mathematics and student behavior more than any other variables.

Differentiated instruction means creating multiple paths so that students of different abilities, interests, or learning needs experience equally appropriate ways to absorb, use, develop, and present concepts as a part of the daily learning process. It allows students to take ownership and greater responsibility for their learning, and provides opportunities for peer teaching and cooperative learning. No two children are alike and no two children learn in the same identical way (Diamond, 1989). In differentiating instruction, the complexity of the contents, learning activities and product will vary so that all students are challenged while the essential curricula concepts remain the same. Differentiated instruction enables teachers to plan strategically so they can meet the needs of each and every student in today's highly diverse classroom.

Flexible grouping is a term commonly given to the practice of varying group strategies for instruction (Chapman, 1995). It is a good effective teaching strategy to enhance learning in a diverse classroom. Flexible grouping is often needed to facilitate differentiated instruction (Gregory & Chapman, 2002). Everyone has strong and weak areas of ability and interest. Students need to be placed in groups that maximize their

instructional time based on their performance levels. Groups can be given tasks that are differentiated and adjusted to the different levels of thinking taxonomy: remember, understand, apply, analyze, evaluate and create. Flexible grouping is the ability to find the right size (Gregory & Chapman, 2002).

Higher order thinking skills are the kind of skills that help students to reason, to think critically, and to solve problems. Teaching for higher order thinking skills is best practice when concepts taught are related to students' experiences that engage students at higher levels of Bloom's Taxonomy (analysis, evaluate, and create).

It is becoming a challenge to teach learners of varied abilities, accommodating disabilities, linguistics challenges and other unique abilities in the classrooms. Today's students enter the classroom with different learning experiences and prior knowledge. Same-age students differ remarkably in their life circumstances, past experiences, and readiness to learn and as such have significant impact on the content and pace of instruction (Tomlinson, 2000, cited in Anderson, 2007). Teachers' delivery of instruction can have direct impact on how students learn and behave in the classrooms.

In conclusion, teachers have to meet the needs of each and every student in their classrooms by varying instruction so that each student can achieve success. Varying instruction could come through differentiated instruction, use of flexible groupings, and teaching for higher order thinking skills that utilize students' experience. Neither schools nor teachers can change students' life circumstances, family background or the family's socioeconomic status but teachers can make an impact on students they teach when they

vary instructional strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills among others.

- No two children are alike.
- No two children learn in the same identical way.
- An enriched environment for one student is not necessarily enriched for another.
- In the classroom, we should teach children to think for themselves.

Based on the findings of this research study, there was a significant relationship between most independent variables: lesson planning, instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills, students' response to creative and different instructional strategies, administrators' supervision and postobservation conferences and administrators' supervision and professional/faculty development and student performance: student achievement in mathematics and student behavior. However, the use of instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills and students' response to creative and different instructional strategies had the most positive significant relationship with students' achievement in mathematics and student behavior. Teachers' style and delivery of instruction can have direct impact on how students learn and behave in the classrooms. Therefore, teachers should vary instruction to meet the individual needs of each and every student in their classroom for certainly, one size doesn't fit all (Gregory & Chapman, 2002).

Implications for School Leaders

It is a well known fact that today's students enter the classroom with different learning experiences and prior knowledge. Same-age students differ remarkably in their life circumstances, past experiences, and readiness to learn and as such have significant impact on the content and pace of instruction (Tomlinson, 2000, cited in Anderson, 2007). Teachers' delivery of instruction can have direct impact on how students learn and behave in the classrooms. Educational leaders should find ways to counteract the causes of students' poor performance in the mathematics section of CRCT and also better ways to deal with discipline problems in the classrooms. Schools cannot change or control the students' life circumstances or their backgrounds. A research study on teaching has it that what the students know prior to entering class is the most powerful predictor of student learning; and teachers cannot control the entry-level knowledge of their students (Evertson, 1980; McDonald, 1976; Soar, 1968; Stallings, 1981). The same research also found that the second most powerful predictor of student learning is what the teacher does in the classroom. Students' performance; academic achievement in mathematics and student behavior in the classroom lies in teacher performance which includes lesson planning, instruction and methods of delivery, assessment of instruction and classroom management/discipline. The most fundamental way to improve education especially in public schools is through teacher performance.

Teacher training should make necessary changes to produce teachers that should teach and manage their classrooms effectively. Most teacher training colleges might consider including teacher performance as core courses. The school district leadership

should also provide year round on-going preservice and in-service training for teachers and administrators on teacher performance. Colleges and universities should try to focus on equipping teachers while in training with different instructional strategies, especially differentiated instruction, flexible grouping, and teaching for higher order thinking skills that will help students with problem-solving skills and learn to think critically.

Recommendations

The following recommendations are based on the findings of this research study. The intent is to improve student performance: student achievement in mathematics and student behavior in the selected schools and the district as a whole.

Recommendations for Central Office, School Supervisors, Associate

Superintendents and Superintendent

1. The school district's central office should work together with state school board of education, colleges/universities to make some changes in teacher training towards teacher performance. To effect meaningful change in student performance in public schools, it should start with specific training in higher order teaching skills among other instructional strategies. The best way to improve education in public schools is through teacher performance (Peterson, Kromrey, Borg, & Lewis, 1990).
2. Adopt district-wide instructional strategies to align with state's standards that will meet the different needs of each and every student in the classroom.
3. Provide preservice training for new and transferring teachers from other districts and year-round in service training for teachers already in the system

on the use of different instructional strategies that are effective in the classroom and have proven successful on students' performance: student academic achievement in mathematics.

4. Provide preservice training for new administrators and on-going in-service training for all administrators on the use of different instructional strategies that are effective in the classrooms and for teacher observation, post observation conferences and evaluation.

Recommendations for Principals

It is recommended that principals:

1. Review previous year's CRCT mathematics results with each grade level.
Have each grade level work together as a team to find out students' areas of strengths and weaknesses. Brainstorm on instructional strategies that would counteract the weak areas.
2. Have each homeroom teacher put in writing at the beginning of the school year a set of instructional strategies that they intend to use based on the CRCT data that will help improve student achievement in mathematics.
3. Provide teachers with on-going professional development workshops, and in-service training based on postobservation conferences and evaluation results and based on the recommendations of teachers and instructional coaches.
4. Meet once a month with the assistant principal, instructional coaches and grade level teachers to emphasize the practice and implementation of different

instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills in the classrooms.

5. Provide opportunity for each grade level to meet once a week on a designated day to plan together and discuss celebrations, areas of improvement, and share effective instructional strategies.
6. Provide opportunity once a month for inter-grade level meetings, for example third and fourth grades teachers meet to discuss and share best teaching strategies that address fourth grade poor performance in the mathematics section of CRCT.
7. Communicate and emphasize the need for instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills that relate to students' experience at weekly faculty meetings.
8. Emphasize that teachers utilize benchmark tests results and other classroom assessments to identify poor performing students and their areas of deficiencies. Teachers will then use the data to redeliver instruction using instruction strategy designed to include differentiated instruction, flexible grouping, and teaching for higher order thinking skills.

Recommendations for Teachers

It is recommended that teachers:

1. Work as a grade level to identify all the level one students based on the last year's CRCT results.

2. Individual teachers write out plan for every level one student in his/her classroom. Use the existing data (CRCT) to find out student's areas of strengths and weaknesses. Write in each student's plan, strategies to re-teach the concept(s) students are weak in. Students should not be left on same plan for the rest of the year. Plans should be reviewed periodically and those students that have shown some improvement should be taken off level one.
3. The single biggest factor affecting the academic growth of any population of youngsters is the effectiveness of the individual classroom teacher (Sander, 1999).
4. Work as a team on grade level to share ideas and activities that would be most effective for teaching using instruction strategy designed to include differentiated instruction, flexible grouping and teaching for higher order thinking skills.
5. Communicate with parents at Parent Teacher's Conferences and during scheduled meetings about student progress and deficiencies and possible remediation strategies.
6. Provide tutorial classes for individual student before or after school to address student weaknesses.
7. Provide students with several methods for solving mathematical problems using higher order thinking skills to address different learning styles.

Recommendation for Future Research

It is recommended that future researchers look into teaching for higher order thinking skills that uses student experiences. Research literature addressing academic outcomes of experiential education in traditional school settings is scant (Hedin, 1983; Robe, 2000). There are continuing calls for more research on experiential education (Ewert, 1987). Most programs that schools have in place to counteract students' low performance are in reading. There are a lot of programs to remediate reading but very little for mathematics in the ten schools that were selected for this study. Replicate this study throughout the district to help identify effective and best teaching practices to remediate fourth grade poor performance in mathematics.

APPENDIX A

Teacher Perceptions of School Questionnaire

Dear Teachers:

Please help by completing this questionnaire. I am conducting research for a program in education at Clark Atlanta University. Therefore, I am interested in your honest opinion from a purely research basis. The study of human subjects requires that you provide your opinion anonymously. Please do not state your name. There is no risk as the results will be provided as group data, and no person can be identified. Your participation is voluntary, and you can withdraw at any time. It is hoped that the results will provide recommendations for school improvement to benefit this school and the school system, and Clark Atlanta University as it attempts to improve its programs to serve your school system.

Your participation in completing this questionnaire is appreciated. Thank you.

Petronilla Eze

Appendix A (continued)

Directions: Please circle only one response for each item from the following possible responses.

1 = Never 2 = A Little 3 = Sometimes 4 = Most Times 5 = Always

	A: In this school, administrators:					
1	Ask teachers to identify weak students and/or those with low performance on CRCT when writing lesson plans	1	2	3	4	5
2	Ask teachers to identify causes for low performance in class or on CRCT when writing lesson plans	1	2	3	4	5
3	Discuss with teachers how to utilize differentiated instruction to counteract the causes for low student performance	1	2	3	4	5
4	Discuss with teachers how to use flexible groupings in math to teach weak students to master higher order thinking skills	1	2	3	4	5
5	Discuss with teachers how to utilize students experiences in teaching for higher order thinking skills	1	2	3	4	5
6	Discuss with teachers how to develop tests to measure higher order thinking skills	1	2	3	4	5
	B. In developing lesson plans, teachers are required to:					
7	Identify weak learners based on student performance on assignments and/or CRCT (math)	1	2	3	4	5
8	Identify the causes for students' learning problems	1	2	3	4	5
9	Show how the differentiated instructional strategy as used will manage, or counteract, the causes of students' learning problems	1	2	3	4	5
10	Identify the explanations for operationally linking higher order thinking skills to students' social experiences	1	2	3	4	5

Appendix A (continued)

11	Identify questions for asking students to relate their everyday experiences to higher order thinking skills required for solving math problems	1	2	3	4	5
12	Identify questions for students to link knowledge in math to different subject areas	1	2	3	4	5
13	Identify the specific higher order thinking skills that would be taught through the use of flexible group activities	1	2	3	4	5
14	Identify the specific higher order thinking skills that would be taught through the use of “hands-on” activities	1	2	3	4	5
15	Identify questions for assessing whether or not students are learning through higher order thinking skills during the teaching process	1	2	3	4	5
16	C. In grade level teams, the assistant principal for instruction asks teachers to:					
	Identify the concepts that students missed or failed on tests	1	2	3	4	5
17	Identify the reasons for students having difficulty with higher order thinking skills questions on tests	1	2	3	4	5
18	Identify the gender, and other social and economic conditions of weak students	1	2	3	4	5
19	Demonstrate how the use of flexible groups would help weak students to improve in problem solving skills	1	2	3	4	5
20	Demonstrate how the differentiated instructional strategy would help weak students to improve	1	2	3	4	5
21	Develop strategies for utilizing weak students’ everyday experiences to learn higher order thinking skills	1	2	3	4	5

Appendix A (continued)

22	Develop multiple choice tests to assess what is taught at grade level in correspondence with CRCT items and benchmark tests in math	1	2	3	4	5
23	Develop multiple choice tests that require students to apply principles in math to solve problems in different situations	1	2	3	4	5
24	Develop multiple choice tests that require students to analyze problems to determine inter-relationships among parts	1	2	3	4	5
25	Develop multiple choice tests that require students to demonstrate they can create or infer principles, based on information provided, in new meanings	1	2	3	4	5
26	Develop multiple choice tests that require students to demonstrate they can make choices when comparing the worth of different concepts	1	2	3	4	5
	D. In response to my creative teaching strategies:					
27	Weak students tend to have personal experiences that are appropriate for teaching higher order thinking skills	1	2	3	4	5
28	Weak students can relate math concepts to lessons in social studies, reading and science	1	2	3	4	5
29	Weak students volunteer to answer higher order thinking questions	1	2	3	4	5
30	Weak students utilize higher order thinking skills to answer teacher questions	1	2	3	4	5
31	Weak students are motivated and are on task	1	2	3	4	5
32	Weak students are able to use their experiences to develop higher order thinking skills	1	2	3	4	5
33	Weak students can ask higher order thinking questions	1	2	3	4	5

Appendix A (continued)

34	Weak students can explain by using complex ideas	1	2	3	4	5
E. In post-observation conferences with teachers, the administrators:						
35	Discuss the use of questions that require students to use their everyday experiences to learn higher order thinking skills in the text	1	2	3	4	5
36	Discuss the use of questions that require students to link new content to previous lessons' concepts	1	2	3	4	5
37	Discuss the extent to which differentiated instruction in math improved weak students' higher order thinking skills	1	2	3	4	5
38	Discuss the extent to which flexible groups improved weak students' higher order thinking skills	1	2	3	4	5
39	Discuss the extent to which hands-on activities improved weak students' higher order thinking skills	1	2	3	4	5
40	Discuss how to ask questions during teaching to assess if students were learning higher order thinking skills	1	2	3	4	5
Instructors at faculty development workshops provided:						
41	Strategies that worked in coping with the real problems students have on standardized tests	1	2	3	4	5
42	Strategies that worked for reducing real discipline problems	1	2	3	4	5
43	Strategies that worked on how to teach for higher order thinking skills	1	2	3	4	5
44	Strategies that worked on how to construct tests on higher order thinking skills	1	2	3	4	5
45	Strategies that worked on how to evaluate and research problems in the classroom	1	2	3	4	5

Appendix A (continued)

In this section use the following scale to select number of students in response to each item

1 = None 2 = A Few 3 = Some 4 = Most 5 = Almost All

	In your opinion, how many:					
46	Students who were below grade level are now performing at or above grade level on class assignments or bench mark tests in math	1	2	3	4	5
47	Students who were weak on problem solving skills have now improved in performing at or above grade level on class assignments and benchmark tests math	1	2	3	4	5
48	Students who were weak are now earning A and B grades on math	1	2	3	4	5
49	Students who were at Level 1 on the CRCT are now performing to move Level 2 or above in math	1	2	3	4	5
50	Students who were at Level 2 on the CRCT are now performing to move Level 3 in math	1	2	3	4	5
51	Behavior problem students have improved in behavior to the level of well behaved students	1	2	3	4	5
52	Behavior problem students are now completing class assignments on time	1	2	3	4	5
53	Behavior problem students are now completing homework assignments appropriately	1	2	3	4	5
54	Behavior problem students have improved their overall performance in class	1	2	3	4	5

Appendix A (continued)

Demographic Data: Please select the appropriate

55. What grade are you teaching? Please select one

1 = First Grade 2 = Second Grade 3 = Third Grade 4 = Fourth Grade

5 = Fifth Grade

56. How many students are in your class?

1 = 17 or less 2 = 18-21 3 = 22-25 4 = 26 to 29 5 = 30 or more

57. How many students are on free or reduced lunch?

1 = below 20% 2 = 21 to 40% 3 = 41 to 60% 4 = 61 to 80%

5 = 81 to 100%

58. Teacher gender: 1 = Female or 2 = Male

59. Teacher experience: 1 = 1-2 years 2 = 3-5 years 3 = 6-10 years

4 = 11-15 years 5 = 16 or more years

60. Teacher qualification: 1 = B.A., B.S., B.S. Ed 2 = M.A., M.S., M.Ed

APPENDIX B

Data Analysis Table

Liker Scale: 1 = Never 2 = A Little 3 = Sometimes 4 = Most Times 5 = Always
 1 = None 2 = A Few 3 = Some 4 = Most 5 = Almost All

Table B-1

Descriptive Analysis of the Dependent and Independent Variables

	Mean	STD.	S.E.
Teachers' Use of Higher Order Questioning Techniques in Lesson Planning And Testing	3.771	.874	.122
Identifying Causes of Students Learning Problems	3.55	.926	.129
Teacher Use of High Ordered Thinking Assessment Tests	3.35	1.253	.177
Teachers Being Asked to Identify Weak Learners' Gaps and Incorporate Them into the Lesson Plans	4.147	.991	.138
Differentiated Instruction in Delivery and Assessment of the Lessons	3.62	1.054	.147
Teachers' Use of Flexible Grouping In Lesson Planning	3.93	.943	.132
Post-Evaluation Conferences With Administrators About the Use of Differentiated Instruction, Flexible Grouping and Teaching for Higher Order Thinking Skills in Relationship to Students' Experiences	3.58	1.08	.152

Appendix B (continued)

Table B-1 (continued)

	Mean	STD.	S.E.
Faculty Development Workshop That Cover Strategies Related To Standardize Tests, Discipline Problems, Higher Order Thinking Skills, Constructing Higher Order Thinking Skill Tests, And Evaluating And Research Classroom Problems	3.45	1.06	.149
Grade Level	3.15	1.179	.172
Class Size	2.15	.875	.126
Socioeconomic Status	4.40	1.195	.178
Teacher Experience	3.55	1.062	.066
Student Achievement	2.82	1.023	.143
Student Behavior	2.68	1.154	.161
Weak Student Outcome	3.11	.967	.135

APPENDIX C

Reliability Summary

	Cronbach Alpha
Administrative Supervision	.915
Lesson Planning Format	.952
Differentiated Instruction, Higher Ordered Thinking Skills & Flexible Grouping Strategies	.955
Students' Response To Creative And Different Instructional Strategies	.969
Administrators' Supervision And Post Observation Conferences	.969
Administrators' Supervision And Staff Development	.921
Student Achievement	.959
Student Behavior	.978

REFERENCES

- Ahrens, B. C. (2008). Finding a new way: Reinventing a sixth-grade reading program. *Journal of Adolescent & Adult Literacy*, 48(8), 642-654.
- Al-Balhan, E. M. (2007). Learning styles in relation to academic performance in middle school mathematics. *Digest of Middle East Studies*, 16(1), 42-57.
- Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). A taxonomy for learning, teaching and assessing: A revision of Bloom's Taxonomy of educational objectives: Complete edition, New York : Longman.
- Beyer, B. K. (2008). *What research tells us about teaching thinking skills*. Fairfax, VA: George Mason University.
- Bissell, A. H., & Lemons, P. (2006). *A new method for assessing critical thinking in the classroom*. Durham, NC: Duke University.
- Boulware-Gooden, R., Carreker, S., Thornhill, A., & Joshi, R. M. (2007). Instruction of metacognitive strategies enhances reading comprehension and vocabulary achievement of third-grade students. *The Reading Teacher*, 61(1), 70-77.
- Bloom's Taxonomy. (1956). A revision of Bloom's taxonomy: An overview. Retrieved from http://www.unco.edu/cetl/sir/stating_outcome/documents/Krathwohl.pdf
- Brannon, D. (2008). Character education: A joint responsibility. *The Education Digest*, 73(8), 56.

- Burke, K., & Burke-Samide, B. (2004). Required changes in the classroom environment: It's a matter of design. *The Clearing House*, 77(6), 216-240.
- Burke, K., & Dunn, R. (2003). Learning style-based teaching to raise minority student test scores. *The Social Studies*, 94(14), 167-170.
- Campbell, B. (1990). *Increasing student achievement through brain-based strategies* (unpublished master's thesis). Chicago: Saint Xavier University.
- Chapman, M. L. (1995). *Flexible grouping strategies in the multiage classroom*. Columbus, OH: The Ohio State University.
- Conroy, M.A., Sutherland, K. S., Snyder, A. L., & Marsh, S. (2008). Classwide interventions: Effective instruction makes a difference. *Teaching Exceptional Children*, 40(6), 24-30.
- Corso, R. M. (2007). Practices for enhancing children's social-emotional development and preventing challenging behavior. *Gifted Child Today*, 30(3), 51-56.
- Darling-Hammond, L. (2000). *Teacher quality and student achievement: A review of state policy evidence*. Retrieved from <http://epaa.asu.edu/epaalv8nl>
- Dewey, J., & Freire, P. (1973). Reasserting the philosophy of experiential education as a vehicle for change in the 21st century. *Journal of Experiential Education*, 22(2), 91-98.
- Diamond, M. (1989). The brains behind the brain. *Educational Leadership*, 56(3), 22.
- Downer, J. T., Rimm-Kaufman, S. E., & Pianta, R. C. (2007). How do classroom conditions and children's risk for school problems contribute to children's

behavioral engagement in learning. *School Psychology Review*, 36(3), Retrieved from <http://www.questia.com>

Druian, G., Owens, T., & Owens, S. (1980). Experiential education in the classroom and academic outcomes: For those who want it all. *The Journal of Experiential Education*, 29(1), 61-71.

Dunn, R., & Dunn, K. (2002). Effects of traditional versus learning-styles instructional methods on middle school students. *The Journal of Educational Research*, 97(1), 42-51.

Ellis, D. K., Ellis, K. A., Huemann, L. J., & Stolarik, E. A. (2007). *Improving mathematics skills using differentiated instruction with primary and high school students* (unpublished master's thesis). Saint Xavier University, Chicago, IL.

Evertson, C. (1980). Clinical pedagogy: Defining and measuring the teaching of essential and higher order thinking skills. *Journal of Education Research*, 84 (1), 5-12.

Ewert, K. (1987). Experiential education in the classroom and academic outcomes: For those who want it all. *The Journal of Experiential Education*, 29(1), 67-77.

Farkas, R. D. (2003). Effects of traditional versus learning-styles instructional methods on middle school students. *Journal of Educational Research*, 97(1), 42-51.

Ferguson, R. F. (1999). *Improving mathematics skills using differentiated instruction with primary and high school students* (unpublished master's thesis). Saint Xavier University, Chicago, IL

Flood, J., Flood, S., Lapp, D., & Nagel, G. (1992). Am I allowed to group? Using flexible patterns for effective instruction. *The Reading Teacher*, 45(8), 608-615.

Glaser, W., Reith, H. J., Kinzer, C. K., Prestidge, L. K., & Peter, J. (1999).

An analysis of the impact of anchored instruction on teaching and learning activities in two ninth grade language arts classes. *Remedial and Special Education, 24*(3), 173-184.

Gregory, G. H., & Chapman, C. (2002). *Differentiated instructional strategies. One size doesn't fit all*. Thousand Oaks, CA: Sage.

Groves, J. D. (2006). Art as a behavior modification tool. *Multicultural Education, 13*, 4.

Haager, D., & Klinger, J. K. (2005). Reach: A framework for differentiating classroom instruction. Retrieved from [http://rtitlc.ucf.edu/Tools/documents/Diff/REACHA Framework_for_Differentiating_Classroom_Instruction.pdf](http://rtitlc.ucf.edu/Tools/documents/Diff/REACHA_Framework_for_Differentiating_Classroom_Instruction.pdf)

Haughey, M., Snart, F., & Da Costa, J. (2003). Literacy achievement in small grade 1 classes in high-poverty environments. *Canadian Journal of Education, 26*(3).

Hedin, D. (1983). Experiential education in the classroom and academic outcomes: For those who want it all. *The Journal of Experiential Education, 29*(1), 67-77.

Heing, J. R., Hula, R. C., Orr, M., & Pedscaleaux, D. S. (2001). *The color of school reform: Race, politics, and the challenge of urban education*. Princeton, NJ: Princeton University Press.

Hoffman, J. (2002). *Flexible grouping strategies in the multiage classroom*. Columbus, OH: The Ohio State University.

Holloway, J. H. (2000). *Improving mathematics skills using differentiated instruction with primary and high school students* (unpublished master's thesis). Saint Xavier University, Chicago, IL.

Hopson, M. H., Simms, R. L., & Knezek, G. A. (2002). Technology in Education.

Journal of Research on Technology in Education, 34(2), 109-119.

Ives, B., & Obenchain, K. (2006). Experiential education in the classroom and academic

outcomes: For those who want it all. *The Journal of Experiential Education*, 29(1), 67-77.

Ivie, D. (1998). Experiential education in the classroom and academic outcomes: For

those who want it all. *The Journal of Experiential Education*, 29(1), 67-77.

Kim, J. S. (2005). The effects of a constructivist teaching approach on student academic

achievement, self-concept, and learning strategies. *Asian Pacific Education Review*, 6(1), 7-19.

King, A. (1994). An analysis of the impact of anchored instruction on teaching and

learning activities in two ninth grade language arts classes. *Remedial and Special Education*, 24(3), 173-184.

Kushman, J. W., Sieber, C., & Harold, K. P. (2000). This isn't the place for me: School

dripout. In D. Capuzzi & D. R. Gross (Eds.), *Youth at risk: A prevention resource for counselors, teachers, and parents* (3rd ed., pp. 471-507). Alexandria, VA: American Counseling Association.

Lamdin, D. (1996). Evidence of student attendance as an independent variable in

education production functions. *The Journal of Educational Research*, 89(3), 155-162.

Larkins-Strathy, B. K., & LaRocco, D. J. (2007). *Teachers as caring classroom leaders:*

A case study of practices that encourage the hearts of students. Paper presented

at the Annual New England Educational Research Organization Conference, Chicago.

Lefebvre, D. (2003). *Increasing student achievement through brain-based strategies* (unpublished master's thesis). Chicago: Saint Xavier University.

Leming, J. (1998). Experiential education in the classroom and academic outcomes: For those who want it all. *The Journal of Experiential Education*, 29(1), 67-77.

Lumpkin, A. (2007). *Caring teachers: The key to student learning*. Lawrence, KS: University of Kansas.

Markova's Thinking Patterns Inventory. (1992). Learning styles in relation to academic performance in middle school mathematics. *Digest of Middle East Studies*, 16(1), 42-57.

Martin, V. E. H. (2002). *The effects of a mastery motivational climate motor skill intervention on student achievement and behavior in a naturalistic physical education setting*. Auburn University. Retrieved from <http://Umi.com.exprozy.auctr.edu>

McDonald, F. (1976). Clinical pedagogy: Defining and measuring the teaching of essential and higher order thinking skills. *Journal of Education Research*, 84 (1), 5-12.

McGee III, R. M. (2006). *Teacher implementation of mathematics curriculum initiatives in a test-driven accountability environment: An ethnographic investigation into leadership, school culture, and teacher's attitudes, beliefs and concerns*. Philadelphia, PA: Drexel University.

- Nemec, C. J., & Watson, R. A. (2007). *Teacher initiatives to reduce truancy among high school students*. Chicago: Saint Xavier University.
- O'Keefe, D. (1995). An analysis of the impact of anchored instruction on teaching and learning activities in two ninth grade language arts classes. *Remedial and Special Education, 24*(3), 173-184.
- Okpala, C. O., Smith, F., Jones, E., & Ellis, R. (2000). *A clear link between school and teacher characteristics, student demographics and student achievement*. Retrieved from <http://www.questia.com/P.M.qst?a=o&d=5001210652>
- Persuad, G. (2008). EDA 690 Educational Evaluation course. Atlanta, GA: Clark Atlanta University.
- Piaget, J. (1929). The Australian early development index, who does it measure: Piaget or Vygotsky's child? *Australian Journal of Early Childhood*. Retrieved from <http://www.highbeam.com/doc/1G1-224990952.html>
- Peterson, D., Kromery, J., Borg, J., & Lewis, A. (1990). Clinical Pedagogy: Defining and measuring the teaching of essential and higher order thinking skills. *Journal of Education Research, 84* (1), 5-12.
- Pociask, A., & Settles, J. (2007). *Increasing student achievement through brain-based strategies*. Chicago: Saint Xavier University.
- Pogrow, S. (2005). HOTS revisited: A thinking development approach to reducing the learning after grade 3. *Phi Delta Kappan, 87*(1), 64-75.
- Reith, H. J., Bryant, D. P., Kinzer, C. K., Colburn, L. K., Hur, S., Hartman, P., & Choi, H. S. (2003). An analysis of the impact of anchored instruction on teaching and

- learning activities in two ninth grade language arts classes. *Remedial and Special Education*, 24(3), 173-184.
- Rickard, G. L., & Banville, D. (2005). High school physical education teacher perceptions of block scheduling. *The High School Journal*, 88(3), 26-34.
- Rimm-Kaufman, S., Downer, K., & Pianta, R. (2005). The contribution of classroom setting and quality of instruction to children's behavior in the kindergarten classroom. *Elementary School Journal*, 105(4), 377-394.
- Robe, R. (2000). Experiential education in the classroom and academic outcomes: For those who want it all. *The Journal of Experiential Education*, 29(1), 67-77.
- Rock, M., Gregg, M., Ellis, E., & Gable, R. (2008). REACH: *A framework for differentiating classroom instruction*. Tuscaloosa, AL; University of Alabama.
- Rosler, B. (2008). Classroom success stories. Process drama in one fifth-grade social studies class. *The Social Studies*, 99(6), 265-268.
- Sander, W. L. (1999). Teachers, teachers, teachers! *Blueprint Magazine*, 4.
- Soar, G. (1968). Clinical pedagogy: Defining and measuring the teaching of essential and higher order thinking skills. *Journal of Education Research*, 84 (1), 5-12.
- Stallings, J. (1981). Clinical pedagogy: Defining and measuring the teaching of essential and higher order thinking skills. *Journal of Education Research*, 84 (1), 5-12.
- Swanson, R. A.. (2001). Experiential education in the classroom and academic outcomes: For those who want it all. *The Journal of Experiential Education*, 29(1), 67-77.
- Tomlinson, C. A. (2000). REACH: *A framework for differentiating classroom instruction*. Tuscaloosa, AL: University of Alabama.

- Tracey, D. H., & Young, J. W. (2005). *An internet-delivered, individually differentiated reading program: Effects on students' literacy achievement and technology skills*. Miami, FL: National Reading Conference.
- Walker, J. M. T. (2008). Looking at teacher practices through the lens of parenting style. Long Island University. *The Journal of Experimental Education*, 76(2), 218-240.
- Whitney, J. D. (2007). *The use of technology in literacy instruction: Implications for teaching students from low socioeconomic backgrounds*. Washington, DC: ERIC Publications.
- White, F., Hayes, B., & Livesey, D. (2005). The Australian early development index, who does it measure: Piaget or Vygotsky's child? *Australian Journal of Early Childhood*. Retrieved from <http://www.highbeam.com/doc/1G1-224990952.html>
- Wiggins, R. A. (1994). Large group lesson/small group follow-up: Flexible grouping in a basal reading program. *The Reading Teacher*, 47(6), 450-460.
- Ysseldyke, J., Spicuzza, R., Kosciolk, S., Teelucksingh, E., Boys, C., & Lemkuil, A. (2003). Using a curriculum-based instructional management system to enhance math achievement in urban schools. *Journal of Education for Students Placed At Risk*, 8(2), 247-265.